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CLINICAL AND SOCIAL PROBLEMS OF EPILEPSY*

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LECTURE I

In his Lumleian Lectures in 1890 Hughlings Jackson set forth his mature views "On Convulsive Seizures." Among his more important conclusions was his placing of the seat of the epileptic disturbance in the cells of the cortex. Paralysis was due to "destroying lesions," convulsions to "discharging lesions." Epilepsy was the name for "occasional, sudden, excessive, rapid, and local discharges of grey matter." These discharges occurred "because the cells have by some pathological process become highly unstable" (Jackson, 1931).

Jackson held that the study of unilateral convulsions unaccompanied by loss of consciousness was the key to the understanding of convulsions in general. Such convulsions, he said further, "tell us nothing of the pathological processes by which the local instability results." In this statement he warns against an error still prevalent at the present day, that focal convulsions necessarily indicate gross or expanding lesions such as tumour.

Jackson was not the first to describe unilateral convulsions, now known universally by his name. He himself gave the credit to Bravais, though in fact they had been observed from the days of antiquity, and Bright and Wilks both noted such disturbances and attributed them to lesions in the cortex of the brain (Temkin, 1945). In Gowers's (1901) words Jackson showed a "mode of investigation" rather than a new type of epileptic attack. He brought convulsions into line with his conception of physiological levels in the nervous system. Local convulsions he called "epileptiform" to distinguish them from "epileptic" convulsions or "genuine" epilepsy. The former referred to discharges at a relatively low physiological level—the middle level or sensorimotor cortex—the latter to discharges at a higher level, which he thought to be in the prefrontal region.

These conclusions received powerful support from the subsequent discovery by Fritsch and Hitzig, and shortly after by Ferrier, of the excitability of parts of the cortex to electrical stimuli. To these researches Jackson expressed his great indebtedness, for they showed that stimulation of the cortex could produce not only isolated movements but local and general convulsions. Great physiologists thereafter confirmed and expanded these observations in the laboratory, and neurological surgeons demonstrated them on the exposed cortex of human subjects.

So the matter stood until Berger (1929) announced his discovery of the recording, through the unopened skull, of the spontaneous electrical activity of the brain. Later he (Berger, 1932) showed that epileptic attacks were accompanied by large electrical discharges. Amplified several million times, the record of the brain waves forms the electro-encephalogram. The new method has opened broad avenues of research, of which the problems of epilepsy are but one. Gibbs, Lennox, and Mrs. Gibbs, of Boston (1936, 1938), were the first to associate distinctive changes in the electro-encephalogram with different types of epileptic attack: after two and a half years' experience they formulated the view that epilepsy is a paroxysmal cerebral dysrhythmia. The electro-encephalogram shows the brain to be the seat of constant rhythmic activity. The rhythm varies under physiological conditions—for example, in waking from sleep there is an increase in the rate of the discharges. This is a time at which epileptic attacks are especially prone to occur. According to this view seizures are due to sudden and excessive changes of rhythm either to the fast or to the slow side. Grand mal is characterized by extreme acceleration of the electrical activity of the cortex; psychomotor attacks by extreme slowing of this activity; and petit mal by alternation of fast and slow activity. The same types of dysrhythmia (though shorter in duration and of lower voltage) may be present between attacks.

Thus the discharges of grey matter conceived by Hughlings Jackson, as a result of his clinical observations, to be the basis of epilepsy have passed from the realm of hypothesis. The electro-encephalogram records their presence though it fails to reveal their pathogenesis.

The Significance of Local Epilepsy

The phenomena of local epilepsy continue to afford valuable aid, first in the understanding of epilepsy in general, and secondly in clinical diagnosis, provided that within this term are included discharges arising in any excitable area of the cortex and not only the motor cortex. In local epilepsy we can recognize both positive and negative phenomena and learn something of factors which may excite or suppress abnormal cortical activity (Holmes, 1927).

In *local motor epilepsy* the positive element consists of movements, usually clonic. When these cease the affected part is commonly left partly or completely paralysed (Todd's paralysis); this weakness may last for a few minutes or for much longer, occasionally for several days even in the absence of any progressive lesion (Feiling, 1942). It is usually attributed to exhaustion of the cortical neurones, but it may be due to a positive inhibitory action of the discharge, as sometimes an attack is represented solely by loss of movement. When in a local epileptic attack the speech centres are involved the effect is always purely inhibitory—namely, a loss of speech.

During the stage of paralysis the tendon reflexes are usually increased as compared with the normal side, and if the lower limb is involved the plantar reflex is extensor. The involuntary movements may remain localized to the part first affected or may spread in a manner corresponding to the representation of movements in the cortex. Walshe (1943) emphasizes that the motor cortex is not a mosaic of points but an area of graded

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representation of movement. For example, in the hand area the movements represented are predominantly but not exclusively those of the hand. Thus a stimulating lesion tends to release a widespread convulsion. The most complex movements have the widest field of representation, and these have the lowest convulsive threshold. Such movements are those of the thumb and index finger, angle of mouth, and great toe, in one of which the convulsive movements of a motor Jacksonian attack almost always start.

In *local sensory epilepsy* there are analogous sensory phenomena described as numbness, tingling, or deadness, limited to one area, as the hand or foot, or "marching" as in the motor attack. Sensory loss may follow, usually in the form of astereognosis, but sometimes including also impairment of pain and temperature sense.

Local visual epilepsy consists of crude visual sensations described usually as flashes of light appearing on one side of the body and attributable to discharges in the opposite occipital cortex; these are usually followed by transient impairment of vision in the affected half-field.

The "*uncinate fit*," due to discharges in the region of the uncinate gyrus of the temporal lobe, is unique by reason of the associated psychical symptoms. A subjective smell, unpleasant and nauseating, is the usual local sign, and with it occurs the "dreamy state" described by Jackson, or more elaborate disturbances of memory. It is a common experience that smells have a special power of reviving memories, and it is evident that such associations implicate mechanisms in the temporal lobe, for in temporal epilepsy these seem to be released. The result varies: a familiarity state, meaning a strong sense that everything going on has happened before; a sense of strangeness in which surrounding objects or people are recognized but seem unreal; or a vision of a definite picture which recurs with each attack.

Auditory epilepsy consists of subjective ringing or other sounds occurring in the episodic manner of epilepsy and referred to the ear opposite to the side of the discharge in the temporal lobe. It is rare as an isolated phenomenon and is not followed by deafness, since hearing has a bilateral cortical representation and is not affected by unilateral lesions.

In all these types of local epilepsy peripheral stimuli may influence the attack in the direction either of facilitation or of inhibition. Thus, occasionally, continued use of a part may start an attack there, or repeated sensory stimuli may set off a sensory attack. Bright lights may incite visual epilepsy, and a noise, even a special musical note (Holmes, 1927), may precipitate auditory attacks in those subject to them. More frequently an attack just beginning may be arrested by peripheral stimuli, as by rubbing or grasping an affected limb.

The Question of Consciousness.—These phenomena of local epilepsy are important in clinical diagnosis because they point clearly to the situation of the discharging lesion, except that the uncinate seizure does not of itself tell us whether the disturbance is in the right or the left temporal lobe. A local discharging lesion may: (*a*) remain localized; (*b*) spread locally as through the motor or sensory area; (*c*) spread locally and thence by association fibres to the opposite side of the brain. When this occurs consciousness is lost: it may indeed be clouded just before this occurs if the local spread is rapid (Walshe, 1943). The spread can only be by association fibres; when local convulsions are produced experimentally, section of the corpus callosum prevents spread to the opposite side and general convulsions and unconsciousness do not occur (Penfield and Erickson, 1941).

Major Seizures (Grand Mal)

Gowers's accounts of the major convulsive seizure, which is much commoner than the Jacksonian attack, have never been improved upon. There is great variation in its mode of onset, but the picture of the developed attack is fairly uniform. It may begin with local manifestations known as the aura, which indicate the site of the initial discharge—motor, sensory, visual, etc. The usual pattern of the later stages is subject to modifications which may cause difficulty in diagnosis. The characteristic phases may not be distinguishable: only tonic rigidity or only clonic movements may be observed. As in local epilepsy, a major attack may occasionally be precipitated by peripheral stimuli, as by handling a limb, by a sudden noise, by the hearing of music (Critchley, 1937), or by a sudden emotional disturbance.

Unfortunately in the majority of cases the clinical features of the major convulsive seizure provide no indication of the site of the discharging lesion. An aura as a first distinct stage of the fit is present in about three-fifths of cases (Gowers, 1901; Lennox and Cobb, 1933), but in only a minority of these has it a clear "local sign"; in the rest it consists of indefinite epigastric or cephalic sensations. These may be of practical value to the patient as warnings enabling him to sit or lie down before he becomes unconscious, but the neural localization of the sensations is unknown. Analogy with local epilepsy becoming generalized suggests that seizures without detectable local onset may begin with a focal discharge in a "silent" area. Jackson, as already noted, thought that the seat of discharge must be in the prefrontal region. Later investigations have neither proved nor disproved this hypothesis. Electrical stimulation of the prefrontal region produces no movements beyond conjugate movement of the eyes and turning of the head to the opposite side. Most electro-encephalographic studies do not point to a single focus as the origin of generalized seizures. Golla, Graham, and Walter (1937), however, found abnormally slow waves which they called "δ" waves present between attacks in a considerable proportion of cases of major epilepsy: these were localized, and it appeared possible that they corresponded to epileptogenic areas in "silent" parts of the cortex.

Inhibition in Epileptic Attacks

Grand mal is mainly a manifestation of excitation not usually accompanied or followed by inhibitory phenomena except sleep. But, as in local epilepsy, diffuse epileptic discharges may be mainly or wholly inhibitory in their effects. Certain attacks occur which are characterized by sudden unconsciousness with slumping or falling but no convulsion: the patient may get up immediately or lie unconscious for several minutes. They have been called "static seizures" (Hunt, 1922): Kinnier Wilson spoke of somewhat similar attacks as "akinetic," and Lennox (1945a) has defined them clearly under this term. Clinically they seem more akin to major epilepsy than to petit mal, both in their relative severity and in their prognosis; but as regards the electro-encephalogram and also their response to remedies they are nearer to petit mal.

Petit Mal

The petit mal is almost pure inhibition. The term is much misused, often being applied to any attack of short duration. It should be restricted to attacks of loss of consciousness lasting usually only a few seconds, without warning and without sequel. An occasional fall would not exclude the diagnosis, but frequent falls are inconsistent with a diagnosis of petit mal. During the attack the expression is blank, speech ceases, the eyes may turn upwards, the eyelids flicker, and there may be a little jerking of the head, occasionally of the arms, but no cyanosis or convulsion. The attacks are less likely to occur when the patient is occupied by physical or mental activity, but if they occur while he is walking he may continue without colliding with others and without dropping anything held in his hand.

As is well known, petit mal attacks frequently coexist with major seizures: about two-thirds of children beginning with petit mal develop grand mal. If, however, such children remain free of major seizures the attacks may cease entirely after a few years, with no impairment of mentality even after many thousands of attacks. This pure form was described by Adie (1924) and others as "pyknolepsy." Lennox (1945a) prefers the name "pykno-epilepsy" to emphasize that they are not something different from epilepsy. Since they are now recognized as identical with petit mal there is no need to retain either of these additional names.

The nature of the petit mal is especially obscure. An epileptic discharge in an area of complex activity such as a speech area causes, as already noted, a loss of function—not the production of words but speechlessness. Pure loss of consciousness seems to indicate an inhibitory discharge in the highest level of integration in the nervous system. The electrical changes both during and between petit mal seizures are the most constant and characteristic of all types of epileptic discharge, and they arise symmetrically and synchronously over a wide area of the cortex, but chiefly in the frontal lobes. Penfield (Penfield and Erickson, 1941) argues, however, that there can be no final re-representation of sensorimotor functions in the frontal lobes, since the removal of large parts of these does not abolish conscious processes in man, and he suggests that the level of final integration lies in the region of the hypothalamus.

Release Phenomena in Epilepsy

After a major epileptic attack the patient may for a time exhibit co-ordinated activity, which is, however, obviously uncontrolled, or unconscious in the sense that the patient has no awareness of what he is doing. Similarly, certain attacks occur which are characterized solely by abnormal behaviour except that at the onset there may be champing movements of the jaws, grimacing or muttering, occasionally a writhing or turning movement of the trunk. Such attacks, which are not uncommon, have in the past usually been explained as post-epileptic automatism, the assumption being that they were sequels of a brief petit mal seizure. It is doubtful, however, whether there is any unconsciousness, though there is an alteration of consciousness indicated by complete amnesia for the whole episode. The term "psychomotor attack" or "psychic equivalent" is now usually used for them: their clinical distinction from other types of seizures is supported by distinctive electro-encephalographic tracings.

These attacks of elaborate but purposeless activity, whether they constitute the whole attack or follow a recognizable epileptic incident, must be due to release of lower mechanisms from conscious control. The highest centres, whatever may be their neural site, are either inactivated directly by an epileptic discharge or exhausted by such a discharge, as a limb may be paralysed after a local motor seizure.

The type of activity shown in automatism is of great variety, but tends to repeat itself in successive attacks in the same patient. Usually harmless, it may include violence or indecent exposure and thereby assume serious social or medico-legal significance.

Epileptic Myoclonus

Many patients subject to major epilepsy exhibit between attacks sudden sharp myoclonic jerks, usually limited to flexor movements of the upper limbs, and commonly described by patients or relatives as "the jumps." They occur chiefly and often exclusively in the early morning hours, so that the patient may knock over the breakfast cups, but in a few patients they are very frequent throughout the day. Rarely, an attack may jerk the patient suddenly to one side and bring him to the ground. Of considerable value in diagnosis, and occasionally the sole manifestation of an epileptic tendency, they are difficult to explain, for they are usually bilateral and associated with bilateral cortical discharges in the electro-encephalogram and yet are unaccompanied by any loss of consciousness.

Status Epilepticus

In this condition the patient has attacks of major epilepsy recurring for hours or days without recovery of consciousness. Isolated attacks, however frequent, with recovery between attacks, are not status epilepticus.

ESSENTIAL MECHANISMS

Irritation (positive discharge), inhibition (negative discharge), and release—these seem to be the essential mechanisms in epilepsy: they are seen most clearly in local epilepsy, but are also detectable in generalized attacks. Conceived and elaborated by the philosophical mind of Hughlings Jackson, they are not invalidated by later researches, and remain sound hypotheses which help in the interpretation of clinical phenomena.

Diagnosis of Epilepsy

The separation of epilepsy from other paroxysmal disorders is a common clinical problem. Gowers (1907) included within "the borderland of epilepsy" fainting or syncope, vasovagal attacks, vertigo, migraine, and certain disturbances of sleep, including narcolepsy; he was, however, careful to say that these troubles seem to be "near epilepsy, but not of it." Twenty years ago, in his Lumleian Lectures, Collier (1928) went further, feeling that these disorders, as well as tetany, were closely related to epilepsy and that some metabolic dyscrasia might underlie them all. However, such biochemical changes as have been found in epilepsy cannot be regarded as primary or causative.

Purdon Martin (1945) has expanded Jackson's theory of the discharging lesion, applying it to a wide variety of paroxysmal disorders as well as to some conditions of continuing irritation such as the thalamic syndrome. He does not suggest that any of these is epileptic. Gibbs and Lennox (1938), however, suggest that a disturbance which is essentially epileptic—involving abnormal rhythmic activity—may start in any portion of the nervous system. In clinical epilepsy this is in the cortex; but this conception extends to chorea, Parkinsonism, neuralgia, etc.

There seems a danger here of theory outrunning experience. There may well be many types of discharging lesion, but it does not follow that all these phenomena are epileptic. Williams (1944) sees a similar danger in the presence of electro-encephalographic disturbances of an epileptic kind in many conditions not usually considered epileptic—for example, faints and toxic convulsions. If all these electrical changes are to be regarded as epileptic "the limits of epilepsy will become so wide as to make the term meaningless."

In the uncertain state of knowledge of these various disturbances of nervous function, classification should rest on clinical distinction. Viewed in this light the resemblances between migraine, faints, etc., and epilepsy become less impressive than the differences btween them. For a clinician a diagnosis of epilepsy carries certain implications: it means that there may be serious intracranial disease, and involves the possibility of progressive mental deterioration and always of certain social consequences, complications which do not arise in other paroxysmal disorders.

Faints

Clinical differentiation is, however, sometimes very difficult. Much the commonest problem is to distinguish—

in doubtful cases, for in many the answer is obvious—between epilepsy and the fainting or syncopal attack. According to Lewis (1933), in a faint there are two distinct but simultaneous processes—namely, a slowing of the heart by increased vagal tone, and a fall of blood pressure by vascular relaxation, chiefly in the splanchnic area. These reactions are produced reflexly through a central nervous mechanism. The term vasovagal attack is therefore used by Lewis as an alternative to fainting or syncope, and such attacks are not epileptic, for they are not primarily neurogenic and they carry none of the implications of epilepsy. Between fainting and petit mal as formerly defined a careful history should distinguish, but between fainting and the akinetic type of epileptic attack, with loss of consciousness and falling but without convulsion, the resemblance is close. On the other hand, in a faint there may be clonic movements: they are usually slight in spontaneous faints, but are well known in cardiac syncope. Experience with blood donors has shown that they are sometimes marked (M.R.C. Report, 1944). In a recent paper dealing with attacks of unconsciousness in five hundred members of the Royal Air Force, Rook (1947) observes that "the occurrence of twitching or even major convulsions in association with loss of consciousness does not justify a diagnosis of epilepsy on these grounds alone."

The one feature which is almost diagnostic is that a faint is a reactive phenomenon, a fit rarely so. The stimulus in the great majority of cases is emotional, though fatigue, recent blood loss, or other factors impairing the general health may facilitate the reaction. Difficulty arises because in persons predisposed to fainting the emotional stimulus may be a very slight one. Epileptic attacks are only rarely due to a direct emotional or reflex stimulus, but, as already noted, such a sequence does occur occasionally. Fox (1941) observes that as a generalization the statement that excitement causes fits is false: boredom, anxiety, and worry do, however, predispose in certain cases. He reported that when the patients under his care were subjected to frequent air raids there was no increase whatever in the frequency of their attacks. Shafar (1941) found this equally true of out-patients attending a London hospital throughout the war years.

The Syndrome of Gowers

Unfortunately the name "vasovagal" was given by Gowers (1907) to a syndrome of a different order which is certainly not a simple syncope, and whose relationship to epilepsy is also unconvincing. The picture in these attacks is not a uniform one, and this probably accounts for varied reports about their frequency. The features of a severe attack include extreme pallor, coldness, difficulty in breathing, pain of anginal distribution, and the angor animi or sense of impending death which Ryle (1939) stresses as the foremost feature. The attacks may last half an hour or more. In nearly all the patients there is a strong background of anxiety. Personally I have seen only a few cases in which the pattern of the attack corresponded closely to this severe type, but many in which a state of anxiety was associated with milder manifestations of the same order. Though there is no evidence of cortical disturbance and no unconsciousness or amnesia, they have been held to be epileptic variants in which autonomic disturbances dominate the picture instead of constituting only subsidiary features as in major epileptic attacks (Wilson, 1928). An occasional patient has also had epilepsy, and a family history of epilepsy, migraine, neurosis, or psychosis is quite frequent; but such evidence does not in my view place these attacks in the category of epilepsy, because they are clinically distinct and their prognosis and treatment are entirely different. Walshe (1941) points out that there is no consistent evidence of either vasomotor change or vagal inhibition. The term vasovagal attack, if used at all, should therefore be employed in Lewis's sense as an alternative to syncope or fainting due to transient cerebral anaemia.

Laryngeal "Epilepsy" and Breath-holding Attacks

Also more closely allied to syncope than to epilepsy are attacks due to respiratory obstruction. One type is the so-called laryngeal epilepsy first described by Charcot as laryngeal vertigo. The attack follows coughing, and the subjects are usually of plethoric type with chronic laryngitis or bronchitis. In spite of an absence of previous or family history of epilepsy Whitty (1943) thinks that these attacks are primarily neurogenic—that is, caused by venous congestion in a predisposed person. Rook (1946) saw four cases in the Royal Air Force due to coughing or choking: in three electro-encephalograms were done and were normal. A predisposition must be admitted, since chronic coughs are so common and these attacks infrequent, but, as in predisposition to fainting, this is not a convincing argument for an epileptic basis.

Not so rare are the breath-holding spells of young children: in the North of England mothers call them "the kinks." Bridge and others (1943) reported 83 cases from the Johns Hopkins Hospital, of whom 60% became unconscious and 40% had convulsions. Two of these children became epileptic and two probably did. But this is not epilepsy. It seems to me that great caution is needed in diagnosis, but if this is correct the treatment is of the psychological causes of the habit.

Narcolepsy and Cataplexy

Narcolepsy is theoretically nearer to epilepsy, as it is certainly a neurogenic disorder. Again some have sought to include this syndrome within the all-embracing concept of epilepsy, but we must separate it decisively on clinical grounds. Electro-encephalographic reports are contradictory, some showing an epileptic type of change (Cohn and Cruvant, 1944) and some only sleep changes. Narcolepsy means attacks of irresistible sleep or of a condition which resembles sleep (Nattrass, 1938). They are preceded by an intense feeling of fatigue, and can often be resisted for a time but seldom prevented: they last usually a few minutes, but it may be only a few seconds, and, exceptionally, if the patient is undisturbed he may continue to sleep. He is usually wakened easily and is alert at once. Frequency of attacks varies, but is usually fairly constant in each patient: there may be two or three daily or one every few minutes.

Cataplexy means attacks of loss of power and of tone induced by emotion of any kind, but especially hearty laughter. There is no loss of consciousness, but the patient sinks to the ground, unable to move or speak for perhaps half a minute. During the attack, as I have verified on several occasions, in striking contrast to inhibitory epilepsy, the tendon jerks are abolished and the plantar reflexes normal; the jerks return instantly when the attack is over. If a cataplectic attack is resisted it may pass into sleep.

The combination of narcolepsy and cataplexy which occurs in the majority of cases is unmistakable. If either type of attack occurs alone, confusion with epilepsy is possible. No case exhibiting the complete syndrome of sleep attacks plus cataplexy has been reported as developing epilepsy.

Other Types of Immobility

In cataplexy inhibition of postural tone is an essential feature. Certain other states of immobility occur in which tone is unaffected and posture maintained. This is seen in catalepsy, which in association with "waxy flexibility" of the limbs is one of the motor phenomena of schizophrenia.

Here the immobility is prolonged, but Rudolph (1946a, 1946b, 1947) has drawn attention to a condition which seems best explained as transient catalepsy, and which is known to nurses as "night nurses' paralysis." In an attack the individual becomes suddenly immobile in either a standing or a sitting position, unable to speak or move but fully conscious and able to see and hear. The attack may last for a few seconds or a few minutes. A similar fixity may result from intense fear; but fear and anxiety are not concerned in the attacks under discussion, nor are they apparently induced by fatigue. Rudolph has found that such attacks occur in others besides nurses, especially in people whose work keeps them stationary. As a rule of no serious significance, and not a condition for which medical advice is sought, it is occasionally dangerous, as in the case of a naval officer who had to be pushed aside on the bridge of a vessel because he was unable to move to prevent an imminent collision. Such a state might well be mistaken for petit mal, but there is absolutely no loss of consciousness.

"*Sleep paralysis*" is a condition of immobility occurring as a person awakes from sleep, or, less frequently, just before he falls asleep. It occurs in narcoleptic subjects and occasionally in normal people, and in the case of post-dormital paralysis is sometimes explained as a cataplectic state induced by a terrifying dream which wakens the subject but leaves him unable to move for perhaps several minutes.

Paroxysmal Vertigo

Labyrinthine vertigo is common, and is of much interest to physicians, as it comes to their notice in the first instance more often than to otologists. In the attack there is a powerful sensation of movement of surrounding objects, less frequently of the patient himself, usually rotatory, to right or left, sometimes vertical: the occurrence of vomiting, staggering, or falling is a measure of the severity of the attack. Difficulty in diagnosis may arise in various ways. First, some attacks are extremely sudden and brief: the patient is flung to the ground without warning, but picks himself up at once without sequel. Secondly, there may be no deafness or tinnitus: these may appear later in labyrinthine disease, or they may be absent because the lesion is not in the ear but in the central connexions of the labyrinth as in disseminated sclerosis and other brain-stem lesions. Thirdly, with the vertigo there may be transient loss of consciousness. I believe this to be very infrequent, and the absence of any unconsciousness or of any trace of convulsive movements distinguishes the great majority of these attacks from any type of epilepsy.

Migraine

Clinically a certain similarity between migraine and epilepsy is due to the occurrence of focal cortical disturbances in both. While typically such symptoms in migraine are precursors of headache, occasionally they occur independently of headache, and tend especially to do so in later life. However, they differ from local epilepsy markedly in several respects. The scotomata, hemianopia, and fortification spectra of migraine are quite different from the visual phenomena which occur in local occipital or temporal epilepsy or in the visual aura of generalized attacks, both in their character and in their duration. The pre-headache sensory symptoms of migraine differ from local sensory epilepsy in their much slower spread, usually lasting about twenty minutes, their predilection for the tongue, lips, and upper limb, with infrequent involvement of the leg, and most decisively, as Gowers (1907) pointed out, in that they may be felt bilaterally, as in both hands and all around the lips and tongue. Local convulsive movements do not occur in migraine, but the rare hemiplegia which accompanies a migraine attack is perhaps more difficult to distinguish from other cortical lesions. Those who are impressed by a close association between migraine and epilepsy seem to me to have overstressed the clinical resemblance between the two.

Aetiologically the relationship of migraine and epilepsy is puzzling. There is impressive evidence (Schumacher and Wolff, 1941; O'Sullivan, 1936) that the cortical phenomena of migraine are due to constriction of cerebral arteries, and that the subsequent headache results from dilatation and excessive pulsation, chiefly of branches of the external carotid. The occasional persistent hemianopia which follows a migraine attack (Adie, 1930) seems likely to be due to prolonged constriction. Vascular changes of this nature have no counterpart in epilepsy, and the pathogenesis of the two kinds of attack seems to be entirely different.

On the other hand there is undoubtedly a genetic relationship between the two disorders. The strongly hereditary character of migraine is not in doubt, but there is also a high incidence of migraine in the families of epileptics. Ely (1930) reported that of 171 persons suffering from epilepsy only 14% gave a family history of epilepsy but 60% gave a history of migraine in a former generation. There is, however, no special incidence of epilepsy in the families of sufferers from migraine. This seems to suggest that migraine is possibly the morbid ancestor of both migraine and epilepsy. Electro-encephalographic studies of migraine subjects have yielded varying results (Lennox, 1946; Dow and Whitty, 1947).

It is doubtful whether any practical deductions can be drawn from these observations connecting epilepsy and migraine. Migraine, though it causes an immense volume of suffering, is a much less serious disease than epilepsy. Lennox says that the two are emphatically not brothers but only some order of cousins. Nevertheless, in his admirable book *Science and Seizures* (Lennox, 1946) he calls migraine "headache seizures" and rather stresses a relationship to epilepsy because he feels this is encouraging for epileptics. No doubt this is true, but it is surely no less discouraging for the much more numerous migraine subjects to be given the idea that their headache attacks are akin to epilepsy. I do not think it is justifiable to speak of a "migraine–epilepsy syndrome."

The Practical Problem

In the present state of knowledge, even if electro-encephalographic records are available, the diagnosis of epilepsy is a clinical decision based on a summary of the evidence. It is therefore helpful to follow a simple plan, beginning by talking with the patient alone, and thereafter interviewing relatives or other observers separately. Children of school age can often give the necessary information as well as adults.

What can the patient tell us about an epileptic fit? Sometimes absolutely nothing, not even that he has fits. For example, the patient may be unaware that he is subject to convulsions in sleep or that he has petit mal during the daytime. In most cases he knows he has had an attack or seizure of some sort, or a series of attacks. He should be asked, "What is the first thing you notice when an attack occurs?" A minority of patients have no warning and become instantly unconscious. But in most cases this question is a vital one, for it brings out information regarding the aura or first stage of the major fit, and this may have precise localizing significance; while in local epilepsy the patient can describe the whole attack.

Secondly, the patient can tell us of his condition when he comes round. Some patients feel quite normal, but the majority have some form of discomfort after major

attacks; prominent among these are headache and a desire to sleep, signs of injury, tongue-biting, incontinence of urine, vomiting, and soreness of muscles.

Then we can hear from the patient of the time of attacks, in particular their relation to sleep and to menstruation. As to sleep, the attacks may (1) occur during sleep, which is virtually diagnostic—of these the patient usually knows by his condition on waking; (2) if diurnal, show a marked predilection for the early morning hours; (3) occasionally occur just as the patient falls asleep. Further, an account of morning myoclonus is common and helpful.

Finally, though the patient cannot tell us of his actions in a state of automatism, he is often aware of this condition through circumstantial evidence, such as finding he has wandered into some strange place. The second part of the history, from relatives, may be decisive, but is often singularly inconclusive.

Aids to Diagnosis

The Electro-encephalogram.—Only if attacks are induced artificially, or if the patient is having frequent attacks under observation, is it possible to observe the distinctive seizure patterns. Confirmation of a clinical diagnosis, or help in a doubtful case, therefore depends on any variations from the normal which may be found in the resting record. Certain paroxysmal discharges seen in this record are virtually diagnostic of epilepsy: clearly defined "larval" attacks—i.e., electro-encephalographic but not clinical attacks—were never found by Williams (1944) in non-epileptic subjects, and the only case in 8,000 in which a wave-and-spike outburst (the type associated chiefly with petit mal) was seen in a non-epileptic was the identical twin of an epileptic. The Harvard workers found this type of outburst in only 1 in 500 of non-epileptic subjects but in 77% of patients with a clinical diagnosis of petit mal. These observers (Gibbs, Gibbs, and Lennox, 1943) conclude that in about 48% of persons with a history of seizures a routine electro-encephalogram is of great value in diagnosis, and in about 42% it is of little or no value. The results depend largely on the frequency of examinations. They are of most value in the diagnosis of petit mal, in which class of case clinical diagnosis is most often in doubt. It must also be recognized that not infrequently successive records in the same patient are inconsistent—a fact which has disturbed a number of clinicians (Holmes, 1946; Rook, 1947). The interpretation of records is a specialized and skilled procedure, and the results must be evaluated only in conjunction with the clinical picture.

Induction of Fits.—Two methods may be used to induce fits for the purpose of diagnosis. The first is the production of alkalosis by overbreathing, the second to cause a positive water balance by forced ingestion of water and the administration of pitressin (Blyth, 1943). A couple of minutes' overbreathing may confirm a diagnosis of petit mal or bring out paroxysmal discharges in the electro-encephalogram. Otherwise these tests are formidable and have little place in ordinary practice.

The Clinical Decision.—Doubts and mistakes are inevitable even after the most painstaking analysis of the evidence. In civil practice, which is free from the complications in diagnosis encountered in the Services, the bias in a doubtful case should, in my view, be towards the diagnosis of epilepsy. If there is a history of recurrent attacks strongly suggestive of epilepsy, though certainty is lacking, the correct diagnosis is more likely to be epilepsy than anything else. Final judgment may be reserved, but appropriate treatment should be instituted.

[The Second Lecture, with the list of references, will appear in our next issue.]

ANTIHISTAMINE DRUG TREATMENT OF ACUTE NEPHRITIS

BY

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This paper is a preliminary report on the use of "anthisan" in the treatment of acute nephritis in children. The number of cases so far treated is small, but the results have been so striking that we feel it is advisable to publish them at this stage in order to stimulate further work on the subject.

No specific treatment has yet been found which will abort acute nephritis or even appreciably modify its course. Treatment up till now has been directed towards providing rest both for the patient and, so far as this can be achieved by dietary restrictions, for his kidneys, in the hope that these organs have not already been irreparably damaged and will eventually recover spontaneously. If the response we have observed to treatment with anthisan can be confirmed over a larger series of cases a very material advance will have been made in the treatment of acute nephritis. In a centre such as this it will be some years before we see enough cases for the proper evaluation of the treatment with adequate controls. Therefore it is advisable that this work should also be undertaken at other and larger centres.

The well-known tendency for acute nephritis to occur at an interval of a week or two after an acute bacterial infection suggests that nephritis may be in the nature of an allergic response to bacterial toxins. The relationship which seems to exist between acute nephritis and some cases of anaphylactoid purpura lends further support to this theory. It would therefore appear reasonable to test the effect of the antihistamine drugs in this condition. So far as we are aware the only published work on this subject is that of Reubi (1946), who has claimed good results from treatment with "antistin" both in a few cases of experimentally induced nephritis in rabbits and in a small series of cases of acute nephritis in human beings. As might be expected, he found that antistin had no effect on chronic nephritis where the kidneys are already irreparably damaged.

We have now used anthisan in the treatment of eight successive cases of acute nephritis admitted to the Royal Aberdeen Hospital for Sick Children. The course of these cases has been compared with that of the nine consecutive cases of this condition admitted immediately preceding the institution of this treatment. Two cases of nephritis which were nephrotic in type from the outset have not been included, but, apart from them, all fresh cases of nephritis admitted to the hospital between October, 1946, and October, 1948, are included in either the anthisan or the control groups.

The groups differ in one important respect—i.e., they were not admitted during the same period of time—and it is of course possible that the later cases were suffering from a relatively benign form of nephritis. The two groups are, however, closely comparable as regards the duration of illness before admission and the clinical assessment of severity at the onset, based on albuminuria, haematuria,

oedema, hypertension, blood urea, and urinary output. The average age of the control group was 9 years and of the anthisan group 6 years.

Four cases in the control group and two in the anthisan group showed signs of active infection in the throat or ears on admission; the same number of cases in each group showed evidence of recurrent or persistent throat infection during the course of treatment. Whether or not these persistent infections had any effect on the course of the disease it is difficult to say. All patients in both groups who showed signs of active infection were given courses of penicillin or sulphonamide, but this did not seem to influence materially the course of the nephritis. Hypertensive convulsions, which occurred in one control and two anthisan cases, were treated on the usually accepted lines by lumbar puncture, hypertonic magnesium sulphate enemata, and sedatives. No other treatment was employed in either group apart from complete rest in bed until abnormal constituents had remained absent from the urine for several weeks and restriction of protein intake as long as azotaemia persisted.

For the purposes of comparison the two groups have been subdivided into "mild" and "moderate or severe" cases. Cases were classified as "mild" if there was no hypertension or oedema other than slight puffiness around the eyes and if azotaemia was absent or minimal. On this basis three cases in the control group and two cases in the anthisan group were mild, leaving six cases in each group which were moderate or severe.

Brief summaries of the important clinical and laboratory findings and of the course of all cases in both groups are given. The figure for "duration" shown at the end of each case history signifies the duration of activity of the nephritic process from the first day of treatment until the last abnormal signs had disappeared. Albuminuria or microscopical haematuria were the most persistent abnormal signs in all cases except No. 16, in which the blood urea remained raised after the urine had returned to normal.

Case Histories

Control Group: Mild Cases

Case 1.—A boy aged 11 was admitted on Feb. 28, 1948, with a six-day history of headache, giddiness, and haematuria. He had had a similar but milder attack in February, 1946. Since then, however, he had been very well, and no albumin had been found in his urine. Examination showed no oedema apart from slight puffiness around his eyes. The throat was healthy. B.P. 110/65. No other abnormality was detected. Urine: smoky, albumin ++, output normal. Blood urea 32 mg. per 100 ml. Sixteen days later his urine was free from albumin, and no red blood cells were seen on microscopical examination. Only once since then has his urine contained any abnormal constituents—namely, a few granular casts. He was discharged on April 3, and was very well when seen at the follow-up clinic two months later. *Duration:* 16 days.

Case 2.—A girl aged 10 was admitted on Feb. 6, 1948, with a history of having developed a sore throat ten days previously. Seven days later she had persistent headache, and on the day before admission her B.P. was 140/90 and her urine contained albumin ++ and scanty red blood cells and pus cells. Examination showed no oedema; the throat was healthy; there were signs of a congenital cardiac defect—probably a patent ductus arteriosus. B.P. 120/80. Blood urea 29 mg. per 100 ml. Urine: no albumin, scanty pus cells, culture sterile. Next day her urine again contained albumin, and this persisted for seven days. At no time during her stay in hospital were casts or red blood cells noted. She was discharged on Feb. 27. *Duration:* 8 days.

Case 3.—A girl aged 8 was admitted on June 19, 1947, with a history of haematuria for two days. There was no history of a throat infection, but she had been vaguely unwell for a week before admission. Examination showed no oedema: tonsils were mildly inflamed; physical examination otherwise negative. B.P. 115/85. Blood urea 58 mg. per 100 ml. Urine: macroscopic blood, albumin +++, occasional granular casts. Her urine became free from albumin 26 days after admission, but a few red blood cells were present microscopically until the 39th day. Tonsillectomy was performed on Aug. 8 under cover of a course of penicillin, and she was discharged on Aug. 14. *Duration:* 39 days.

Anthisan Group: Mild Cases

Case 4.—A girl aged 5 was admitted on June 13, 1948, with a history of haematuria and puffiness of her eyelids for two days. She had had an attack of otitis media two months previously, and this had been followed by haematuria, but her symptoms had cleared in ten days, and she had been back at school for two weeks. Examination showed slight puffiness below the eyes. Tonsils were moderately enlarged but not inflamed. No other abnormality was detected. B.P. 132/70. Blood urea 50 mg. per 100 ml. Urine: macroscopic blood, albumin ++.

Anthisan, 0.1 g. t.i.d., was given from June 13 to June 21 inclusive. By the latter date her symptoms had completely subsided and her urine was free from albumin and red blood cells. She was discharged on June 29 to rest in bed at home for one month. She returned to the follow-up clinic on Aug. 2, having just recovered from an attack of mumps. Her urine showed a trace of albumin, but this had disappeared by her next visit to the clinic on Aug. 30, and she has had no albuminuria since. *Duration:* 8 days.

Case 5.—A boy aged 2 was admitted on Aug. 30, 1948, with a history of listlessness, pallor, and puffiness of the eyelids for two days. There was no history of an upper respiratory infection or of haematuria. On examination he was a pale, listless child with puffy eyelids but no oedema elsewhere. Apart from a soft apical systolic murmur and some enlargement of the tonsils, no other abnormality was detected. B.P. 106/76. Blood urea 20 mg. per 100 ml. Urine: albumin +, scanty red blood cells. Haemoglobin 54%.

Anthisan, 0.1 g. t.i.d., was given from Aug. 30 to Sept. 3 inclusive, and within four days his urine was free from albumin and red blood cells. On Sept. 4 albumin was again present in his urine, but thereafter no abnormality was detected. He was discharged on Sept. 15, and has since been seen twice at the follow-up clinic, his urine being normal on both occasions. This attack of nephritis was accompanied by a fairly severe microcytic hypochromic anaemia, which responded to iron therapy. *Duration:* 6 days.

Control Group: Moderate or Severe Cases

Case 6.—A girl aged 4 was admitted on June 2, 1948. Two weeks before admission she developed a respiratory infection which responded to treatment with sulphathiazole; her right ear then became painful and started to discharge. Two days before admission her urine became dark brown in colour. Examination showed no oedema apart from some puffiness around her eyes. Her throat was healthy, but her right tympanic membrane showed a loss of lustre. An *x*-ray film of her right mastoid showed a loss of translucency, suggesting a mastoiditis. No other abnormality was found on physical examination. B.P. 125/80. Blood urea 66 mg. per 100 ml. Urine: albumin +++, no cellular deposit, output 7 oz. (197 ml.) in first 24 hours. On June 7 gross haematuria was present and there was a purulent discharge from the right ear. The discharge from her ear gradually dried up, her urinary output increased, and her haematuria disappeared. She was discharged on June 22, with a trace of albumin still present in the urine. At the follow-up clinic two months later the albuminuria had disappeared. B.P. 110/70. *Duration:* over 20 days.

Case 7.—A girl aged 11 was admitted on Dec. 8, 1947. Four weeks before admission she developed a sore throat and a generalized scarlatiniform rash. She returned to school after two weeks. On the day before admission her eyelids became puffy and she passed a small quantity of dark-brown urine. On examination there was some puffiness of the lower eyelids.

Her throat was healthy. A few rales were present at her left lung base. No other abnormality was detected. B.P. 176/80. Blood urea 51 mg. per 100 ml. Urine : albumin +++, macroscopic blood. On Dec. 21 the blood urea was 38 mg. per 100 ml., B.P. 110/65; albuminuria was still marked, but no red blood cells were present. The albumin persisted until Feb. 26, 1948, when for the first time the urine showed no abnormality. She was discharged on March 4. *Duration:* 80 days.

Case 8.—A girl aged 4 was admitted on March 20, 1947, with a history of swelling of her face and abdomen and of passing dark-coloured urine for three days. On examination oedema of the face and limbs was present and the throat was inflamed. Physical examination was otherwise negative. B.P. 102/65. Blood urea 156 mg. per 100 ml. Urine : albumin ++, macroscopic blood, output 8 oz. (227 ml.) in first 24 hours. By April 1 the oedema had practically disappeared; the blood urea was 82 mg. per 100 ml. and frank haematuria had ceased. Her blood urea on April 27 was 23 mg. per 100 ml. An acute tonsillitis on May 3 caused an increase in the haematuria and albuminuria. The red blood cells gradually diminished, and on May 19 the urine was free from albumin. A few red blood cells, average 2 per high-power field, persisted till the date of her discharge on July 2. These were still present at her first visit to the follow-up clinic on July 24, but had disappeared by Sept. 4. Her urine has been normal on several occasions since that date. *Duration:* over 126 days.

Case 9.—A girl aged 10 was admitted on Oct. 2, 1946. Three weeks before admission she developed swelling of the eyelids and face. A week later haematuria was first noticed; this gradually became more marked, being accompanied by oliguria. On examination no oedema was present and her throat was healthy. B.P. 155/95. No other abnormality was detected. Blood urea 52 mg. per 100 ml. Urine : albumin ++, macroscopic blood, numerous granular casts, output 15 oz. (425 ml.) in first 24 hours. Blood urea on Oct. 19 was 28 mg. per 100 ml. The albuminuria and haematuria persisted, and the blood pressure was 140/90 on Dec. 15. On March 14, 1947, for the first time red blood cells were not seen on microscopical examination of the urine, but the albuminuria persisted. B.P. 120/70. A trace of albumin was still present in the urine when she was discharged on June 22, and again on her return to the follow-up clinic on July 16. *Duration:* over 287 days.

Case 10.—A boy aged 9 was admitted on Nov. 16, 1946. Three weeks before admission he developed a sore throat, followed a week later by a purulent discharge from his left ear. Five days before admission swelling of his eyelids was noted, and three days later there was haematuria and oliguria. On examination oedema of his face and ankles was present, tonsils infected, left suppurative otitis media. No other abnormality was detected. B.P. 140/100. Blood urea 221 mg. per 100 ml. Urine : albumin +++, macroscopic blood, numerous granular casts, output 14 oz. (397 ml.) in first 24 hours. On Dec. 4 he developed chicken-pox and was transferred to an isolation hospital. At this time his blood urea was 50 mg. per 100 ml. and his B.P. 126/74. Frank haematuria persisted and was present on his readmission to this hospital on Dec. 27. A flare-up of his chronic tonsillar sepsis caused a further increase in the haematuria, and on Feb. 3, 1947, tonsillectomy was performed under cover of a course of penicillin. Gradual improvement took place in spite of an attack of measles starting on March 5. Red blood cells were last seen in the urine on April 28, but traces of albumin persisted until May 25. He was discharged on June 7, and until his last visit to the follow-up clinic on Dec. 24, 1947, his urine remained normal. *Duration:* 190 days.

Case 11.—A girl aged 11 was admitted on Dec. 31, 1946, having developed a sore throat three weeks previously. Four days before admission her face became swollen, and two days later her urine became dark brown in colour and she had several convulsions. There were four further convulsions on the day of her admission. On examination she was drowsy and showed marked generalized oedema; the throat was healthy. No other abnormality was detected. B.P. 170/120. Blood urea 56 mg. per 100 ml. Her urinary output was not diminished. Urine : albumin ++, macroscopic blood. She had no further fits after admission, and by Jan. 12, 1947, her blood pressure had fallen to 120/80 : the urine still contained albumin and red blood cells, but there was no longer obvious haematuria. Albumin and red blood cells were persistently present in the urine till March 8. Thereafter scanty red blood cells and traces of albumin were occasionally present. She was discharged on April 14. *Duration:* 67 days.

Anthisan Group: Moderate or Severe Cases

Case 12.—A girl aged 5 was admitted on June 21, 1948, with a history of having developed a sore throat two weeks previously. On the night before admission her face became puffy and she passed dark urine. On examination there was definite oedema of her face and slight oedema of her legs : follicular tonsillitis was present with enlarged tonsillar nodes. Physical examination was otherwise negative. B.P. 154/100. Blood urea 58 mg. per 100 ml. Urine : albumin ++, macroscopic blood, output in first 24 hours 12 oz. (340 ml.). A throat swab showed haemolytic streptococci.

Anthisan, 0.1 g. t.i.d., was given from June 21 to July 6. The oedema disappeared and the blood pressure rapidly returned to within normal limits. On July 1 her urine was free from albumin and no red blood cells or casts were seen on microscopic examination. She was discharged on July 6, and at her subsequent visits to the follow-up clinic on Aug. 16 and Sept. 28 she remained well and her urine was normal. *Duration:* 10 days.

Case 13.—A boy aged 9 was admitted on July 15, 1948, with a history of having developed a sore throat two weeks previously. Eleven days later he complained of headache and sickness, and his urine was dark brown in colour. Two days before admission his face became swollen and his urinary output was considerably diminished. On examination he was drowsy, and oedema of his face and sacrum was noted; his tonsils were enlarged and inflamed and the tonsillar nodes were palpable; no other abnormality was detected. B.P. 130/108. Blood urea 138 mg. per 100 ml. Urine: albumin ++, 20 red blood cells per high-power field (uncentrifuged specimen), output 13 oz. (368 ml.) in first 24 hours.

He was given anthisan, 0.1 g. four-hourly, from July 15 to 23. His oliguria persisted, and on July 18 his blood pressure rose to 158/120 and he developed a series of convulsions. He had another short convulsion on July 20, but next day his urinary output increased and his blood pressure began to drop. He had no further convulsions, but still complained of headache and vomited occasionally. By July 28 he was symptom-free, his blood urea was 41 mg. per 100 ml., his blood pressure 130/75, and his urine showed no abnormal constituents. He was discharged on Aug. 10. *Duration:* 13 days.

Case 14.—A boy aged 7 was admitted on Sept. 29, 1948, with a history of puffiness of his face and haematuria for three days. Three weeks previously he had complained of a sore throat accompanied by earache. On examination oedema of his face and ankles was present; his throat and ears were healthy and no other abnormality was found. B.P. 150/116. Blood urea 25 mg. per 100 ml. Urine : albumin ++; macroscopic blood.

Anthisan, 0.1 g. t.i.d., was given from Sept. 29 to Nov. 11. On Oct. 6 his urine was still smoky and contained albumin, but his oedema had subsided and his B.P. was 110/70. On Oct. 20 the albuminuria had cleared up and no red blood cells were present on microscopical examination. Routine examinations of his urine since Oct. 20 have on only two occasions shown an abnormality. Once a trace of albumin was noted, and five days later 6 red blood cells per high-power field were found on microscopical examination. *Duration:* 21 days.

Case 15.—A boy aged 5 was admitted on Oct. 21, 1948, with a history of swelling of his face for six days. Three days before admission the swelling became more pronounced and was accompanied by headache and vomiting. There was no history of sore throat or haematuria. On examination his face was oedematous, his throat was infected, and his tonsillar nodes enlarged; no other abnormality was found. B.P. 150/110. Blood urea 45 mg. per 100 ml. Urine: albumin ++,

macroscopic blood, occasional red cell and granular casts. His urinary output was normal.

He was given anthisan, 0.1 g. t.i.d., from Oct. 21 to Nov. 12. On Oct. 23 his urine contained no microscopical blood, but albumin was still present : the facial oedema had almost completely subsided. On Nov. 3 his urine showed no abnormality, and his blood pressure was 105/70. On only one occasion since Nov. 3 has a trace of albumin been found in his urine. *Duration*: 13 days.

Case 16.—A girl aged 6 was admitted on Oct. 22, 1948, with a history of swelling of her face and abdomen and some diminution in her urinary output for seven days. She had recently been a patient in the ear, nose, and throat ward of this hospital, suffering from otitis media, and had been discharged only seven days before her present admission. On examination there was some oedema of her face ; her throat and ears were healthy. No other abnormality was noted. B.P. 185/145. Blood urea 60 mg. per 100 ml. Urine : albumin +, no cellular deposit, output 9 oz. (255 ml.) in first 24 hours.

She was given anthisan, 0.1 g. t.i.d., from Oct. 22. On Oct. 30 the blood pressure was 95/55 ; examination of her urine showed no abnormality, but her blood urea was still 60 mg. per 100 ml. On Nov. 12 the blood urea was 39 mg. per 100 ml. At the time of writing (Nov. 17) she is still having anthisan, and her urine has remained normal on daily examination. *Duration :* 20 days.

Case 17.—A girl aged 9 was admitted on July 5, 1948, with a history of vomiting and abdominal pain for three days. Physical examination on admission was negative, but her urine was found to contain albumin and a few pus cells. Three days after admission she complained of headache, and there was a suggestion of swelling of her face. Her blood pressure was 140/98. On July 10 she developed convulsions. B.P. 182/130. Blood urea 43 mg. per 100 ml. Her urinary output was 16 oz. (454 ml.) in 24 hours, and the urine continued to show albumin and a few pus cells with occasionally a few red blood cells.

Anthisan, 0.1 g. t.i.d., was given from July 11 to Aug. 3. On July 27 her blood pressure was 90/60 and her urine contained no abnormal constituents. Her urine remained normal until Aug. 27, when albumin and red blood cells were again found. Anthisan was again given in dosage of 0.1 g. t.i.d. from Aug. 27 to 31 and 0.1 g. four-hourly from Sept. 1 to 13. From Sept. 6 till her discharge on Oct. 29 no abnormality was found on daily examination of her urine, and her blood pressure and blood urea remained normal. *Duration of initial attack :* 16 days. *Duration of relapse :* 10 days.

Comment

After the first one or two cases had been treated with anthisan the clinical impression was formed that these cases were clearing up more quickly than would have been expected, and this impression became stronger as more cases were treated. A study of the figures given for the duration of the signs of activity in each case confirms this clinical impression, for not only is the average duration in the anthisan group (13 days) much less than that in the control group (92 days) but if the mild and the moderate or severe cases are considered separately the least satisfactory case in the anthisan group has cleared up as quickly as the most satisfactory in the control group (see accompanying Table).

Table Showing Duration of Activity of the Nephritis in Each Case

	Control Group		Anthisan Group	
	Case No.	Duration	Case No.	Duration
Mild cases	1	16 days	4	8 days
	2	8 ,,	5	6 ,,
	3	39 ,,		
	Average 21 days		Average 7 days	
Moderate or severe cases	6	Over 20 days	12	10 days
	7	80 ,,	13	13 ,,
	8	Over 126 ,,	14	21 ,,
	9	Over 287 ,,	15	13 ,,
	10	190 ,,	16	20 ,,
	11	67 ,,	17	16 ,,
	Average 128 days		Average 15 days	
Average duration of whole group ..		92 days		13 days

After the conclusion of anthisan treatment urine examination was made daily in every case up to the date of discharge from hospital, and occasional examination at the follow-up clinic thereafter.

In Case 17 the patient had a recurrence of albuminuria and microscopical haematuria after her urine had remained normal for one month. She was given another course of anthisan, and her urine again cleared after ten days ; it has now remained normal for over two months.

In two other anthisan cases a trace of albumin was present on one occasion, and in one of these scanty red blood cells were seen on another occasion. All other urine examinations were normal.

It is of course too early as yet to speak of complete cure in any of the cases in the anthisan group, and all will be followed up so far as is possible. It seems probable, however, that as a general rule the longer signs of activity persist the greater are the chances of permanent renal damage. There would appear, therefore, to be reasonable grounds for hope that the further progress of the cases in the anthisan group will prove equally satisfactory.

Anthisan did not prevent the development of hypertensive convulsions in Case 13, in which they developed two days after the beginning of treatment. The patient's subsequent progress was, however, unusually satisfactory for such a severe case.

We have so far formed no definite opinions on optimum dosage or duration of treatment. In some cases the administration of anthisan was stopped when all abnormal signs disappeared ; in others it was continued for a further week or two.

Acute nephritis is a disease which may run a very variable course, and with such a small series of cases it would obviously be unjustifiable and premature to advance any definite claims with respect to the efficacy of a particular line of treatment. Much further work will be necessary before the place of anthisan in the treatment of acute nephritis can be accurately assessed, and it is obviously desirable that this work should go forward as speedily as possible. Treatment with anthisan is simple, and toxic manifestations with this drug seem to be few and relatively unimportant. If its value in acute nephritis can be proved a considerable advance in the management of this disease will have been achieved.

Summary

An account is given of the treatment with anthisan of eight cases of acute nephritis in children.

The course of these cases is compared with that of the nine consecutive cases of this condition seen in the same hospital during the period immediately preceding the institution of this treatment.

The duration of activity of the disease, as assessed by abnormal findings in the urine, is notably shorter in the cases treated with anthisan than in those of the control group.

REFERENCE

Reubi, F. (1946). *Helv. med. Acta*, **13**, Suppl. 18, 1.

A recommendation for the building of a health centre, at an estimated cost of £38,000, has been passed by the Birmingham City Council. This first health centre will be experimental and will serve a population of about 20,000. There is to be accommodation for five general practitioners. Eventually it is hoped that there will be between 40 and 50 health centres in the city, each serving about 15,000 people.

CEREBRAL EMBOLISM FOLLOWING CONTUSION OF THE HEART

BY

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Damage to the heart resulting from non-penetrating blows to the chest wall is not rare, and several series of these cases have been recorded (Barber, 1944; Bright and Beck, 1935; Kahn and Kahn, 1929; Warburg, 1940; Hawkes, 1935; Arenberg, 1943; Sigler, 1945). The heart and pericardium, lying close behind the chest wall, are very vulnerable to severe blows in the region of the praecordium, but generally any damage which may be caused is mild and not recognized. In children and youths, however, there is perhaps a greater chance of cardiac trauma than in adults, because the heart is behind a resilient sternum and can be the more easily compressed against the spinal column. Although many cases of cardiac damage have been described we have not been able to find a case recorded in the literature in which a cardiac contusion was followed shortly afterwards by a cerebral embolism. As cardiac trauma may not be recognized as a cause of unexplained hemiplegia in childhood, since the condition has not been described before, and as several points arise from it, the following case is described in detail.

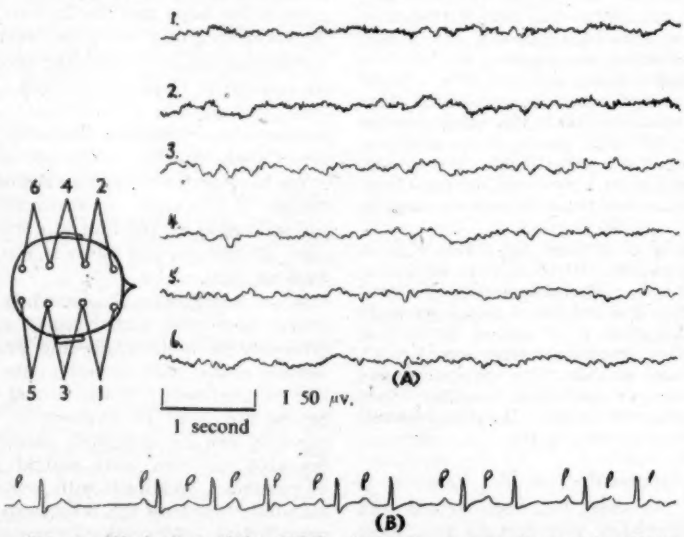

FIG. 1.—(A) April 5, 1948. E.E.G. abnormal. A low-voltage alpha rhythm of 10 c/s underlies a generalized symmetrical abnormality consisting of runs of high-voltage 1 c/s and medium-voltage 3–4 c/s. (B) Electrocardiogram recorded from lead I on the electro-encephalogram The E.C.G. shows evidence of sino-auricular block and varying conduction time. The paper speed and amplification in Fig. 1 were used for all the E.E.G. records.

Case Report

The patient was a very robust, well-developed schoolboy aged 15½, who weighed 11 st. 5 lb. (72.12 kg.). He had lived in Tanganyika until he was 5, and whilst there had had several attacks of fever. He had otherwise been healthy, and in September, 1946, March, 1947, and March, 1948, had been found fit in routine school medical examinations. There was no history suggesting rheumatic fever.

The first incident occurred about one year before the present illness. In March, 1947, when he was boxing at school in a competition, the fight had to be stopped in the first round as he was in severe pain following concentrated punishment to the region of his heart. This pain, which was dull and aching in character, continued for the next week or so. It was aggravated by exercise, and the patient remembered that he had to stop in a cross-country run and walk home because of the severe dyspnoea and pain in his left chest which the exercise had produced. After this there was no recurrence of the pain, and for the next year he played the various school games, including football, with some distinction and without restriction.

He next took part in competitive boxing on March 29, 1948, when he had to fight the boy who had beaten him so thoroughly the previous year. Again he received severe punishment to the left chest, and at the end of the first round he complained to his seconds of dull and sickening pain over his heart. The fight was stopped in the second round, as the boy was in agony. He thinks that he received only one glancing blow to the left side of his head, and he was in no way dazed or confused. The dull pain persisted, and some hours later he noticed a sharp pain, which from his description was pleuritic in type, over his praecordium. He slept badly that night, but the next morning the pain was less, though he felt generally ill and very stiff. He took things quietly, as he found that exercise brought on the pain. On March 31 he had improved considerably, but was still afraid to exert himself. During that afternoon he was sitting watching the boxing finals, when he became aware that his left leg had suddenly become dead below the hip and that he felt very faint. Two hours later his arm became affected, and shortly afterwards he had a general convulsion followed by confusion and headache. No further convulsion occurred, and during the next few days his condition was stationary.

He was admitted to St. George's Hospital five days after the injury. The boy was alert, right-handed, intelligent, and co-operative. The skull was normal in shape and was not tender. Neck movements were full and there was no limitation of straight leg raising. The cranial nerves were perfectly normal, and in particular there was no papilloedema and no field defect. Speech was normal. On the affected left side the leg was very spastic, there was ankle clonus, tendon jerks were increased, and there was an extensor plantar response. Voluntary movements and co-ordination were considerably impaired in the leg. The arm was similarly affected, but to a much smaller degree. Sensation was normal to full testing. The pulse rate was 80 and was irregular. The blood pressure was 130/70. There was no clinical enlargement of the heart. The heart sounds were distant and difficult to hear. A soft systolic murmur was heard over the mitral area, and a basal pericardial rub. Blood count was normal: red cells, 5,250,000; white cells, 6,800 per c.mm., with normal differential count. B.S.R., 2 mm. in 1 hour (Westergren). The blood Wassermann and Kahn reactions were negative. *X*-ray photographs of skull, heart, ribs, and lung fields all showed no abnormality.

The electro-encephalogram on April 5 (Fig. 1, A) was abnormal. There was a low-voltage alpha rhythm of 10 c/s that underlay a generalized symmetrical abnormality which consisted of runs of high voltage 1 c/s and medium voltage 3–4 c/s. There was no evidence of focal abnormality, nor of one side being worse than the other. An electrocardiogram taken at the same time was also abnormal. The curves showed evidence of partial heart-block due to two distinct lesions. First, there was an occasional omission of auricular systole, though the auricular beats were for the most part regular. This would indicate some partial sino-auricular block. Secondly, the P–R interval was prolonged and variable (Fig. 1, B). It varied from 0.2 to 0.4 second in length, which would indicate partial disturbance of conduction of the auriculo-ventricular system. The ventricular rate was 84. The terminal deflections in the three limb leads were normal.

He was kept in bed and given occupational therapy, with resultant improvement in the power of his left upper limb after a week, though the leg was still very spastic. The cardiac arrhythmia persisted, but the heart sounds improved in quality. The systolic murmur increased in intensity; it became harsh and occupied almost the entire systolic period. It was audible all over the praecordium, and was maximal in the left third and fourth interspaces 2½ in. (6.25 cm.) from the mid-sternal line. The pericardial rub was heard only during the first two days in hospital.

An E.E.G. taken on April 13 showed a considerable change. Whereas there were generalized slow waves in the record taken on April 5, these persisted in the left hemisphere and there was suppression of all waves in the right parietal region (Fig. 2).

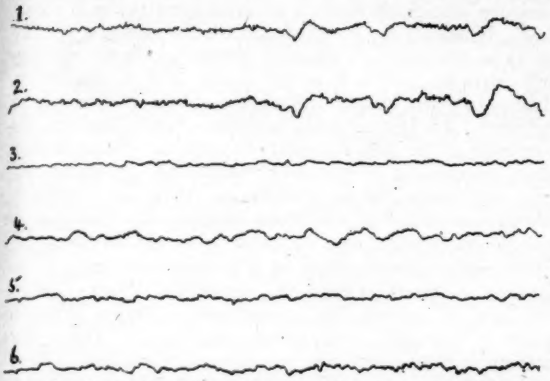

FIG. 2.—April 13, 1948. E.E.G. abnormal. Persistence of abnormal slow waves in the left hemisphere and suppression of all waves in the right parietal region. Recording as in Fig. 1.

On May 4 an E.E.G. showed a slight improvement. A low-voltage dominant frequency of 12 c/s had returned. There were more 6 c/s waves on both sides, and runs of 3 c/s were seen which were more evident on the right than on the left. The records were still far from normal, but showed slight and gradual improvement (Fig. 3). Further E.C.G. recordings were

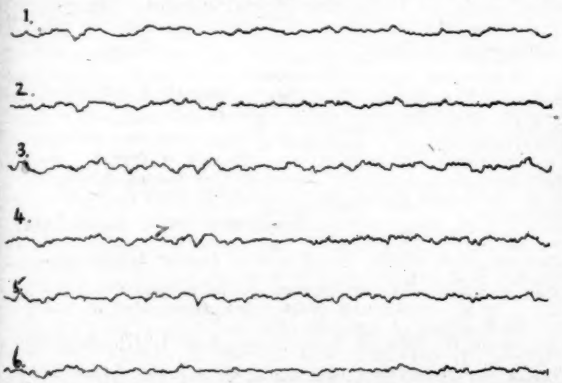

FIG. 3.—May 4, 1948. A low-voltage dominant frequency of 12 c/s is returning: 6 c/s are seen on both sides and runs of 3 c/s were more evident on the right than on the left. The records are still far from normal. Recording as in Fig. 1.

made, and these showed very little change. On May 4 an intramuscular injection of 1/50 gr. (1.3 mg.) of atropine sulphate caused an increase of pulse rate to 120, the rhythm became normal, and the P–R interval shortened to 0.16 second.

The hemiplegia continued to improve so that he was fit to be discharged from hospital on May 14. Since then his convalescence has been controlled and uneventful.

An E.C.G. taken on June 10 by Dr. Alastair Hunter (Fig. 4) was reported by him to show partial heart-block of varying character without the usual Wenckebach's periods. The auricular and ventricular complexes appear normal, but the auricular rate was not regular. It appeared, therefore, that there was a disturbance of sino-auricular activity as well as A–V conduction. On Aug. 19, nearly five months after the injury, examination showed that improvement still continued. There were only residual signs of the hemiplegia, which caused him very little disability. The E.E.G. showed a further slight improvement, the records from the hemispheres being symmetrical. The heart was not enlarged, the sounds were of

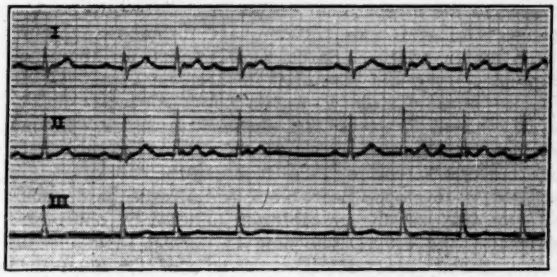

FIG. 4.—June 10, 1948. E.C.G. showing disturbance of sino-auricular activity as well as A–V conduction.

good quality, and no murmurs were heard. The pulse was still irregular, rate 78. The E.C.G. still showed sinus and A–V block, but the P–R interval was shorter than had been seen previously and varied between 0.18 and 0.22 second. He was fully ambulant and was due to start on a sedentary engineering course of instruction.

Discussion

If a non-penetrating blow to the chest is severe enough there may be various cardiac sequelae. The commoner of these include pericarditis, myocardial damage including coronary thrombosis and rupture of the heart, alterations of rhythm, and disturbances of conduction. The clinical picture which results may in severe cases be similar to that seen in myocardial infarction and may be accompanied by the corresponding physical signs and electrocardiographic changes. Injuries of this type have been produced whilst playing various sports. These include cricket (Priest, 1939), football (Lee, Ussher, and Houck, 1943), steeplechasing (Anderson, 1940), golf ("Queries and Minor Notes," 1933), boxing (Jokl, 1941), and surf-bathing (Leinoff, 1940–1). Jokl (1941) reports that professional boxers have found that the effects of well-placed hooks to the heart last for a considerable period, usually for the rest of the fight. He also considers that chest injuries in boxers are very much more common than is generally assumed. In many cases there is no evidence of fracture of the thoracic cage, and there may be no bruising of the chest wall. Kellert (1917) cites the case of a man engaged in digging in a sandbank when it suddenly caved in and he was engulfed up to his waist. When dug out he was dead. A laceration 5 cm. in length extended through the interventricular septum. Rupture of the heart was described by Hamilton (1934) in a child of 7, and by Bilderbeck (1919) in a young Gurkha rifleman without any other evidence of trauma. Barber and Osborn (1941) recorded a large contusion of the left ventricle which caused death in five hours and was the only lesion.

Experimental work has been performed on dogs by Bright and Beck (1935), Moritz and Atkins (1938), and Kissane, Fidler, and Koons (1937). The last-named authors demonstrated that the most frequent cardiac lesions seen after injuries to the chest were subendocardial and subpericardial haemorrhages. Necropsies on human cases have shown tears and contusions of the auricles. Barber and Osborn (1941) obtained a heart which had subendocardial contusions following cardiac massage by a surgeon. Osborn (1943) described bruising on the posterior aspect of the right auricle near the entrance of the inferior vena cava,

tending to spread upwards. This type of lesion is of considerable significance in relation to disorders of rhythm, as it can readily spread towards the sino-auricular or auriculo-ventricular nodes. In the case in which death followed a blow from a cricket ball (Priest, 1939) the anterior surface of the heart was oedematous and bruised and there was a tear near the interventricular septum. In many cases the damage to the myocardium results in electrocardiographic changes similar to those of coronary thrombosis, though this is not invariable. Barber (1942) found an abnormal terminal complex in 12 out of 20 accident cases. Other changes were inverted P waves, supraventricular tachycardia, slurred R waves, and partial heart-block. In one case the P–R interval was 0.35 second five months after an accident. Rosenson (1924) recorded the case of a child of 10 who developed heart-block following a hard punch with the fist over the praecordium inflicted by one of his playmates, the E.C.G. returning to normal three months later. Wood (1948) describes the case of a woman aged 36 who had previously been healthy. In 1941 she was buried for one hour by a bomb explosion, and was almost asphyxiated. When examined shortly afterwards she was found to have a tremor in her left arm and also complete heart-block, both of which disabilities have proved to be permanent. Coffen, Rush, and Miller (1941) described the case of a patient aged 21 with auriculo-ventricular dissociation which developed after a chest injury received at the age of 3. Tuohy and Boman's case (1931) had bundle-branch block.

In the present case, a healthy boy received repeated heavy blows to his chest wall, following which signs and symptoms of cardiac damage were noted. These included severe pain in his left chest, pericarditis, a loud systolic murmur which was barely audible one month later, and evidence of partial heart-block. It is very probable that his heart had been bruised one year previously and was more susceptible to damage as a result of this. It is unlikely that both the sino-auricular and the auriculo-ventricular block were present before the injury. He had been medically examined previously on three occasions, and no comment was made about his cardiovascular system. The prognosis for the cardiac condition is uncertain. The diminution in the degree of heart-block following injection of atropine is a favourable finding, as is also the shortening of the P–R interval during the five months the boy has been under observation. Bruenn (1937) studied 22 patients with acute rheumatic fever who had impairment of auriculo-ventricular conduction time and found that intravenous injection of atropine sulphate abolished the conduction defect in 19. Acceleration in ventricular rate did not necessarily parallel decrease in conduction time. He concluded that in acute rheumatic fever the impairment of auriculo-ventricular conduction is due, in part at least, to an increase in "vagal tone" and that the site of this disturbance lies in the medulla.

There can be no proof of the site of origin of the embolus which caused the hemiplegia in this case, but in view of the other cardiac lesions it is possible that a small piece of a mural thrombus became detached. As the main lesion was to the right auricle, for this to happen there must either have been a spread of the bruising through to the left auricle or else a septal defect. A localized pulmonary lesion is another possibility. In favour of this is the pleuritic type of pain which he had during the first few days after the blows, but against it are the negative *x*-ray appearances and absence of other symptoms of a pulmonary lesion. The third possibility is one of fat embolism from bony damage, but very careful radiology of the ribs and sternum showed nothing suggestive of fracture. The hemiplegia, from its character, was clearly the result of an embolus, and the nature of the E.E.G. supports this view. It is impossible to escape the conclusion that the embolus was the direct result of the myocardial damage which was so clearly demonstrated in the E.C.G., and that the actual cause of the embolus was a mural clot. The story of cardiac damage was obtained only by careful questioning after other causes for the hemiplegia had been excluded. The patient was an intelligent, observant boy, and the circumstances of his injury are dramatic. It is likely that the cardiac cause of other cases of hemiplegia in childhood may be obscured by the severity of the resulting hemiplegic picture. Although the E.C.G. produced striking changes in the present case, these are unusual, and if records are not made shortly after an injury evidence of it may be slight.

Sudden hemiplegia is not a common catastrophe in childhood. When not the result of direct brain injury, it usually occurs in the course of an acute infectious illness, particularly pertussis. Here it is the result of a haemorrhage, whereas in other infectious illnesses, such as pneumonia or diphtheria, it is thought to be embolic. Much attention has been paid in the past few years to cerebral venous thrombosis complicating infections or debilitating illnesses in children and giving rise to hemiplegia. Pyogenic infections, bacterial endocarditis, and blood diseases, also the cause of embolic hemiplegia, were excluded in the present case.

The most frequent cause of a sudden hemiplegia in an apparently healthy child is congenital heart disease, although, of course, the catastrophe is more likely to occur if bacterial endocarditis supervenes. There was nothing in the present case to suggest any congenital heart lesion; but the nature of the pathological process—an otherwise normal child with an abnormal endocardium, mural thrombus, embolus, hemiplegia—differed only in that the heart lesion was acquired. Our case suggests that when all causes of sudden hemiplegia in childhood have been considered the possibility of unsuspected cardiac trauma should be raised.

Summary

A case is reported of a boy who sustained myocardial damage while boxing, with a resulting cerebral embolus. The electroencephalographic and electrocardiographic findings are related to the clinical findings.

REFERENCES

Anderson, R. G. (1940). *British Medical Journal*, **2**, 307.
Arenberg, H. (1943). *Ann. intern. Med.*, **19**, 326.
Barber, H. (1942). *Brit. Heart J.*, **4**, 83.
—— (1944). *Quart. J. Med., n.s.* **13**, 137.
—— and Osborn, G. R. (1941). *Brit. Heart J.*, **3**, 127.
Bilderbeck, A. C. L. (1919). *British Medical Journal*, **1**, 675.
Bright, E. F., and Beck, C. S. (1935). *Amer. Heart J.*, **10**, 293.
Bruenn, H. G. (1937). Ibid., **13**, 413.
Coffen, T. H., Rush, H. P., and Miller, R. F. (1941). *Northw. Med.*, **40**, 195.
Hamilton, J. A. (1934). *British Medical Journal*, **2**, 1101.
Hawkes, S. Z. (1935). *Amer. J. Surg.*, **27**, 503.
Jokl, E. (1941). *The Medical Aspects of Boxing*. Pretoria.
Kahn, M. H., and Kahn, S. (1929). *Ann. intern. Med.*, **2**, 1013.
Kellert, E. (1917). *J. Lab. clin. Med.*, **2**, 726.
Kissane, R. W., Fidler, R. S., and Koons, R. A. (1937). *Ann. intern. Med.*, **11**, 907.
Lee, R. V., Ussher, N. T., and Houck, G. H. (1943). *Amer. J. med. Sci.*, **206**, 722.
Leinoff, H. D. (1940–1). *Ann. intern. Med.*, **14**, 653.
Moritz, A. R., and Atkins, J. P. (1938). *Arch. Path.*, **25**, 445.
Osborn, G. R. (1943). *Lancet*, **2**, 277.
Priest, R. (1939). *J. R. Army med. Cps.*, **73**, 125.
"Queries and Minor Notes" (1933). *J. Amer. med. Ass.*, **100**, 1558.
Rosenson, W. (1924). *Amer. J. Dis. Child.*, **28**, 594.
Sigler, L. H. (1945). *Amer. Heart J.*, **30**, 459.
Tuohy, E. L., and Boman, P. G. (1931). *Ann. intern. Med.*, **4**, 1373.
Wood, P. H. (1948). Personal communication.
Warburg, E. (1940). *Brit. Heart J.*, **2**, 271.

A subcommittee of the Food Standards Committee of the Ministry of Food has been set up to consider the available evidence on the effect of ingesting foods contaminated with minute traces of metals or other injurious elements, and the possibility of prescribing limits for such contamination. A number of scientific bodies and research associations, including the Medical Research Council, are co-operating in the inquiry.

ANTIHISTAMINE DRUGS IN TREATMENT OF NAUSEA AND VOMITING DUE TO STREPTOMYCIN

BY

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AND

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Nausea and vomiting occur in a proportion of patients undergoing prolonged treatment with streptomycin (Heilman and others, 1945; Committee on Chemotherapeutics, National Research Council, 1946; Nichols and Herrell, 1946; Farrington and others, 1947; Streptomycin Committee of Veterans Administration, 1947; Medical Research Council, 1948). This toxic manifestation has been observed in 17 (35%) of 49 patients treated at the Brompton Hospital during the Medical Research Council trials of streptomycin in pulmonary tuberculosis, but in only four have symptoms been severe and persistent.

Such toxic symptoms as urticaria are probably due to hypersensitivity either to streptomycin or to impurities in the preparations used. It was thought that the nausea and vomiting might be caused in the same way and might therefore respond to antihistamine drugs. In the first few cases in which "benadryl" was tried there appeared to be some response, but the symptoms were too slight and transient to assess it accurately. It was possible to carry out controlled investigations in four patients with more severe toxic symptoms.

The symptoms were abolished or considerably reduced when benadryl capsules were given and returned when they were withheld.

Case Reports

Case 1.—A woman, aged 23, with bronchopneumonic pulmonary tuberculosis complained of transient nausea and vomiting on the 10th day of treatment with 0.5 g. of streptomycin hydrochloride six-hourly. Symptoms recurred on the 29th day and rapidly increased in severity. Ten days later the nausea was intense and she vomited after every meal. Benadryl, 50 mg., was given eight-hourly. There was an immediate response, and during the next seven days she had only slight early-morning nausea. Benadryl was discontinued; morning vomiting then returned, lasting for four days until the benadryl was resumed, when it ceased abruptly. Twelve days later benadryl was once more stopped; after three days the severe nausea and vomiting returned. Again benadryl had an immediate effect and the vomiting ceased.

Case 2.—A man, aged 23, with bronchopneumonic tuberculosis developed an urticarial rash on the 18th day of treatment with 0.5 g. of streptomycin hydrochloride six-hourly. On the 23rd day benadryl, 50 mg., was given, and this dose was continued eight-hourly for four days. The rash disappeared. Two days after stopping benadryl he complained of giddiness and vomited once. Benadryl, 50 mg., was given four-hourly and there was no further vomiting during the next two days. Benadryl was discontinued; four days later slight morning nausea occurred. The nausea increased whilst the giddiness decreased. After ten days benadryl was restarted in doses of 50 mg. eight-hourly. The nausea disappeared, but it recurred two days after benadryl was stopped. Three days later benadryl was again given and the nausea at once subsided.

Case 3.—A man, aged 49, with pulmonary tuberculosis and tuberculous bronchitis complained of abdominal discomfort and flatulence on the 10th day of treatment with 0.5 g. of streptomycin hydrochloride six-hourly. Five days later the symptoms became worse, particularly after the midday meal. Benadryl, 50 mg., was given at noon and 6 p.m. This controlled the afternoon abdominal discomfort, but five days later severe giddiness and early-morning nausea developed. The nausea improved after the midday dose of benadryl. The dosage was increased to 100 mg. at 6 a.m. and 50 mg. at noon and 6 p.m. There was considerable improvement in the morning nausea, but the giddiness was unaffected. The nausea remained moderately well controlled, but several times the omission of a dose led to an immediate increase in the discomfort.

*In receipt of a grant from the Medical Research Council.

Control Tests

It seemed possible that suggestion might have played a part in the apparent response. Capsules identical with those containing the benadryl were filled with lactose. These were substituted for the benadryl capsules without the patients' knowledge. Each time the inert capsules were used the symptoms returned, but they disappeared when the capsules containing benadryl were resumed.

Case 1.—On the 74th day the patient had remained free from nausea and vomiting for three days with a dose of 50 mg. of benadryl eight-hourly. Lactose capsules were substituted. Next day the symptoms reappeared with their former severity and continued without remission for two days. The lactose capsules were withdrawn and benadryl capsules substituted. Vomiting ceased after the first dose. Thereafter benadryl was continued until streptomycin treatment ended on the 144th day; no further vomiting occurred, although there was occasional slight nausea. She remained free from toxic symptoms during the next seven weeks. A second course of streptomycin treatment was then started, and after three days the severe and persistent vomiting recurred. Streptomycin was discontinued, the patient's condition being too desperate to warrant its continuance.

Case 2.—On the 59th day the patient had remained free from nausea and vomiting for one day with a dose of 50 mg. of benadryl eight-hourly. Lactose capsules were substituted. The following day the nausea and vomiting reappeared and remained for three days. The lactose capsules were withdrawn and benadryl capsules substituted. There was no further nausea or vomiting. Twice more, on the 76th and 91st days, benadryl was discontinued without substitution of inert capsules; the symptoms recurred within two days and each time ceased abruptly when benadryl was restarted. On the 98th day lactose capsules were again substituted. Symptoms reappeared two days later and disappeared rapidly when the benadryl capsules were resumed. Thereafter there was no further vomiting or nausea, benadryl being stopped at the time of the last streptomycin injection on the 123rd day.

To eliminate the slight sedative action of benadryl as a cause of the response a similar experiment was carried out with identical capsules containing ½ gr. (32 mg.) of phenobarbitone. Substitution of these for the benadryl capsules was followed by immediate exacerbation of the symptoms, and resumption of benadryl capsules by an equally dramatic return to the original condition.

Case 3.—On the 90th day the nausea and vomiting had been moderately well controlled for over eight weeks with a dose of 100 mg. of benadryl at 6 a.m. and 50 mg. at noon and 6 p.m. Substitution of phenobarbitone capsules began at the evening dose. The following morning there was considerably increased nausea and the patient vomited once. The severe nausea lasted two days. Benadryl was then resumed and the nausea decreased after the first dose. Thereafter slight occasional nausea remained up to and beyond the end of streptomycin treatment. The dose of benadryl was gradually reduced, but four weeks after stopping streptomycin there was still slight morning nausea when the benadryl dose was omitted. The severe giddiness was still present.

The experiment was repeated in another case with similar results, both benadryl and "antistin" being used. This was the only one of the severe cases of nausea in which it was possible to withdraw antihistamine drugs before the end of streptomycin treatment.

Case 4.—A woman, aged 20, with bronchopneumonic pulmonary tuberculosis complained of slight giddiness on the 21st day of treatment with 1 g. of streptomycin hydrochloride in a

single daily injection. On the 27th day slight morning nausea appeared and four days later she began to vomit. Benadryl, 50 mg. eight-hourly, was started on the following day. During the next twelve days there was no nausea and she vomited only once. Identical capsules containing phenobarbitone were substituted. Twenty-four hours later the vomiting reappeared. The next day the same capsules containing 100 mg. of antistin were substituted; vomiting ceased after the first dose. Antistin in tablet form was continued for ten days. After its withdrawal neither nausea nor vomiting reappeared and she remained free from these symptoms throughout the remainder of the 32 weeks of streptomycin treatment.

In at least three of these cases we would have had to stop the streptomycin if we had not been able to control the nausea and vomiting. With the continuous administration of benadryl it was possible to complete the full four-months course. We would emphasize, however, that giddiness due to streptomycin was not relieved by the antihistamine drugs.

Summary

Antihistamine drugs were found to relieve the nausea and vomiting which sometimes occur during treatment with streptomycin. This conclusion was supported by control tests in four severe cases. Giddiness due to streptomycin was not relieved.

We are grateful for the co-operation of the physicians of the Brompton Hospital under whose care the patients were admitted. We also wish to thank the hospital pharmacists for help with the control tests and Messrs. Parke, Davis and Co. for a supply of empty capsules.

REFERENCES

Committee on Chemotherapeutics, National Research Council (1946). *J. Amer. med. Ass.*, **132**, 70.
Farrington, R. F., Hull-Smith, H., Bunn, P. A., and McDermott, W. (1947). Ibid., **134**, 679.
Heilman, D. H., Heilman, F. R., Hinshaw, H. C., Nichols, D. R., and Herrell, W. E. (1945). *Amer. J. med. Sci.*, **210**, 576.
Medical Research Council (1948). *British Medical Journal*, **2**, 769.
Nichols, D. R., and Herrell, W. E. (1946). *J. Amer. med. Ass.*, **132**, 200.
Streptomycin Committee of Veterans Administration (1947). *Amer. Rev. Tuberc.*, **56**, 485.

TETANY FOLLOWING REMOVAL OF A PARATHYROID ADENOMA WITH BONE DISEASE: FINALLY ALLEVIATED WITH CALCIFEROL

BY

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When a parathyroid adenoma has caused extensive bone disease its removal is followed by severe tetany. This report illustrates the value of calciferol and the uselessness of parathormone in the treatment of such a case.

Case History

The patient, a woman aged 43, was admitted on June 1, 1947, with backache dating from 1940 and general weakness which had caused her to become bedridden. She had kyphosis and sacral deformity, and radiographs revealed extreme decalcification of the entire skeleton. The blood calcium was 12.2 mg. per 100 ml., phosphorus 3 mg. per 100 ml.; alkaline phosphatase 45 King-Armstrong units per 100 ml., and urea 32 mg. per 100 ml.

A diagnosis of hyperparathyroidism was made, and on July 15 Professor C. F. W. Illingworth removed a small adenoma from one parathyroid gland.

After operation the serum calcium fell abruptly (Fig. 1) and tetany developed. Parathormone was started on the day after operation, 80 units being given intramuscularly. The dose was increased until 200 units were given daily, but no rise in the serum calcium occurred even after the initial doses. During this period the patient received intravenous calcium gluconate (10–20 ml. of a 20% solution two or three times a day) and 12 g. of calcium lactate orally per day. In order to facilitate

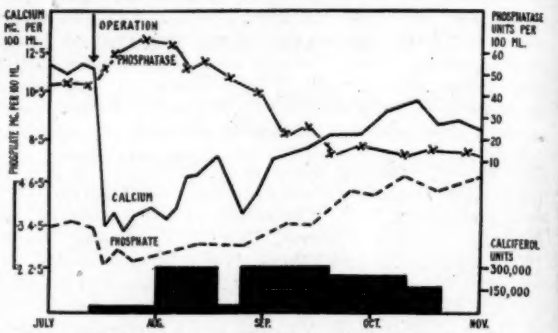

FIG. 1.—Showing the immediate fall in the calcium and phosphate and rise in the phosphatase which occurred after operation. During administration of calciferol the calcium and phosphate gradually rose, and the phosphatase fell, to normal.

absorption of calcium a low phosphorus diet (0.56 g.) and 40,000 units of calciferol were given daily. In spite of these measures the patient's condition rapidly deteriorated. In addition, she became uncooperative, refusing to have injections, and parathormone was stopped on the 14th post-operative day, when the serum calcium was still less than 5 mg. per 100 ml. As a last resort a transfusion of 2½ pints (1.42 litres) of fresh citrated

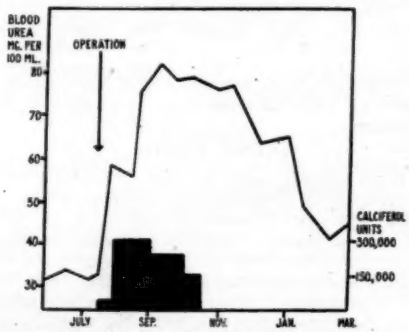

FIG. 2.—Showing rise of blood urea after operation and during calciferol treatment. It fell again after cessation of the drug.

blood (Group A) was given. The result was disastrous. Four hours later tetany, more severe than had hitherto occurred, developed, although examination of the blood showed that there had been no further drop in calcium.

An attempt was then made to raise the serum calcium by increasing the daily dose of calciferol to 300,000 units (6 ostelin tablets, each of 50,000 units). Three days later definite improvement was noted; thereafter the serum calcium gradually rose (Fig. 1), and signs of tetany disappeared and were not again elicited. At no time did the patient show any intolerance to the calciferol, which was stopped on Oct. 22 after a total of 19,000,000 units had been given. The blood urea, however, which rose after operation, remained high until some time after the drug had been stopped (Fig. 2). The patient was discharged

TABLE I.—*The Serum Calcium, Phosphate, and Alkaline Phosphatase after Cessation of Calciferol Treatment*

Date	Serum Calcium (mg./100 ml.)	Serum Phosphate (mg./100 ml.)	Serum Alkaline Phosphatase (King-Armstrong Units per 100 ml.)
30/10/47 ..	9·1	4·0	10·2
21/11/47 ..	8·6	3·8	—
19/12/47 ..	8·5	—	9·0
16/1/48 ..	10·2	3·5	8·6
24/2/48 ..	8·8	3·1	—
10/3/48 ..	9·0	3·2	8·6

on Oct. 31, and since then the blood chemistry has remained satisfactory (Table I). In March, 1948, she was symptom-free, had gained 30 lb. (13.6 kg.) in weight, and was able to walk unsupported.

Discussion

The post-operative tetany was due to an abrupt fall in serum calcium. Efforts to raise the latter by parathormone (total 1,260 units) were unsuccessful even with different batches of the extract. That it was physiologically active was certain, since its effect in producing a diuresis was well marked. It was felt that failure to absorb calcium might account for the lack of response to the hormone, but faecal analysis for calcium showed that this was not so. It was concluded that the fall in serum calcium and the resultant tetany were due not to too little parathyroid tissue but to the "hungry bones" (Cope, 1941). After operation the decalcified skeleton absorbs calcium and phosphorus from the plasma with so much avidity that hypocalcaemia and hypophosphataemia result. The biochemical findings support this theory, the blood calcium and phosphorus both falling immediately after operation. The rise in alkaline phosphatase which occurred is interpreted as being due to increased osteoblastic activity associated with this recalcification.

The severe and almost fatal tetany which followed the transfusion of blood was produced in a different way. The introduction of citrate (the anticoagulant) would on account of its avidity for calcium ions cause a further reduction in the ionized calcium without altering the total calcium. "Citrate tetany" has been produced experimentally, but its occurrence after transfusion must indeed be rare unless, as was the case here, the serum calcium is already depleted.

The rise in serum calcium which started three days after large doses of calciferol had been prescribed was due to the specific effect of the drug and not to a spontaneous recovery, since the calcium fell again when the dosage of calciferol was temporarily reduced (Fig. 1). During its administration, also, the serum phosphorus rose slowly, while the alkaline phosphatase fell with remarkable rapidity and was normal eight weeks after operation. The calciferol did not appear to have any inhibitory effect on deposition of calcium or phosphorus in bone, for during a five-weeks period 69.25 g. of calcium and 14.84 g. of phosphorus were retained.

Not every case of parathyroid adenoma will require massive calciferol therapy in the post-operative phase. It will definitely be indicated when there is well-marked bone disease and should be started immediately after removal of the adenoma. In addition, large doses of calcium must of course be given orally, and until the calciferol takes effect symptoms of tetany may be alleviated by intravenous calcium gluconate; parathormone should not be used.

I wish to thank Professor C. F. W. Illingworth for allowing me to investigate this patient and Professors J. Norman Davidson and J. W. McNee for advice in the preparation of the paper.

REFERENCE

Cope, O. (1941). *Ann. Surg.*, **114**, 706.

The Ministry of Health has issued a pamphlet, "Nursing and Domestic Staff in Hospitals," intended as a guide to hospital management committees on the recruitment, training, and conditions of service of nurses. It includes an example of how to work a shift system in a ward of 34 beds with a staff of one sister, two staff nurses, seven students for day duty, and two nurses for night duty, as well as some observations on what the proper task of a nurse should be and how some of the ward duties at present performed by nurses could be undertaken by domestic orderlies. These include arranging flowers, answering telephones and running messages, preparing meal trays, and handling clothing and laundry. The pamphlet has been sent to boards of governors of teaching hospitals and hospital management committees.

AGGLUTININ ANTI-P IN PREGNANCY

REPORT ON TWO CASES

BY

I. DUNSFORD

(From the National Blood Transfusion Service, Sheffield)

The detection of an antibody in the serum during pregnancy has had much significance since Levine and his co-workers (1941) first propounded the theory (since amply confirmed) that haemolytic disease of the newborn is caused by the action on the foetal erythrocytes of immune antibodies formed in the mother's serum during pregnancy and passed through the placenta into the foetal circulation. The formation of these antibodies is stimulated by an antigen present in the foetal red cells but absent from the maternal red cells, the antigen having been inherited from the father. In a very large proportion of cases it has been demonstrated (Boorman *et al.*, 1942) that the rhesus complex has been involved, and in a few the ABO system (Aubert *et al.*, 1945).

There are not many references in the literature to immune or naturally occurring anti-P, and a leading article in the *British Medical Journal* of Oct. 20, 1945 (p. 535), refers to a case in which anti-P was associated with pregnancy. Wintrobe (1946) states: "In rare cases isoimmunization apparently occurs against the agglutinogens A and B, and possibly even M and P may cause immune bodies to be formed." Nigg (1930) has described two human sera which were later found to contain natural anti-P iso-agglutinins, whilst Wiener (1943) records having found only three or four such sera during a period of ten years. The latter serologist also found this iso-agglutinin in two post-transfusion sera he investigated; he states that "while the possibility exists that this factor could on rare occasions give rise to haemolytic transfusion reactions, to date no such reactions have been reported."

During the course of routine investigations carried out in this laboratory, which included testing the patient's serum at 37° C. against a series of Group O cells chosen not only for their rhesus type but also for their M, N, P, Kellecher, Lewis, and Lutheran types, the agglutinin anti-P was discovered in the sera of two pregnant women. In view of the extreme rarity of such an occurrence the history and the serological findings in these two cases are presented below.

Case 1

Mrs. X, a 2-gravida aged 36, in 1940 had a full-term clinically normal child weighing 6 lb. 12 oz. (3.06 kg.), and was again due for delivery on July 31, 1947. There was no history of transfusion or injection of blood. A blood sample was sent from the antenatal clinic for rhesus typing.

Serological Findings

March 7.—Mrs. X:—Group O Rh-positive. Her serum agglutinated some Group O cells weakly at 37° C., giving much stronger reactions at room temperature and at 4° C. At the latter temperature it appeared specific for P cells with a titre of 4. These reactions were compared with those of a proved anti-P serum and were found to be identical, suggesting that Mrs. X's serum contained anti-P. The serum gave a strong Diamond (Diamond and Abelson, 1945) slide reaction. A sample of serum was submitted to the Blood Group Reference Laboratory, Lister Institute, and confirmed as anti-P.

May 9.—Mrs. X:—Group O; genotype cDE/cde; M, N, p. The titre of the antibody against the same Group O P cell was 16 at room temperature and there was no evidence of enhancing when pooled serum from Group O p persons was used in place of saline. *Mr. X:*—Group A Rh-positive; genotype CDe/cDE; M, N, P. His cells were strongly agglutinated by his wife's serum at 4° C. and room temperature, and weakly at 37° C after absorption with A p cells.

June 20.—Mrs. X:—The titre of the antibody was now 4 with the standard O P cell. There was no evidence of an

incomplete anti-P after destroying the complete antibody by heating at 70° C. for ten minutes and using the Coombs test (Race *et al.*, 1946) for incomplete antibodies.

Aug. 12.—Mrs. X was delivered of a normal infant. *Baby X*:—Group A Rh-positive; M, N, P. Direct Coombs negative. The mother's serum after absorption with A p cells agglutinated the baby's cells strongly at 4° C. and room temperature and weakly at 37° C. *Mrs. X*:—The titre of the antibody was 8, and it could not be enhanced.

Aug. 22.—The child was clinically normal and the haematological reports were normal. On the tenth day of Mrs. X's puerperium the titre of the antibody was 32 at room temperature and was confirmed by the Blood Group Reference Laboratory as anti-P.

Case 2

Mrs. Y, a primipara aged 27, was expecting delivery on Sept. 6, 1947. There was no history of transfusion or injection of blood. A blood sample was sent from the antenatal clinic for rhesus typing.

Serological Findings

March 8.—Group O Rh-positive (D+) p. Her serum agglutinated some O cells weakly at 37° C., but gave much stronger reactions at room temperature and at 4° C. At the latter temperature it appeared specific for P cells with a titre of 4. These reactions were compared with a proved anti-P serum and Mrs. X's serum (previously described) and were found to be identical. From this it appeared that the antibody was anti-P; a sample of the serum submitted to the Blood Group Reference Laboratory was confirmed as anti-P.

April 21.—The titre of the antibody was 32 at 4° C. and room temperature with standard Group O cells and there was no evidence of its enhancement. The titre at 37° C. was 2. There was no evidence of an incomplete anti-P.

June 28.—Mrs. Y's cells were fully investigated: Group O Rh-positive; genotype CDe/cde; M, N, p. The titre of the antibody had not changed.

Aug. 2.—No change in the strength of the antibody.

Aug. 26.—Mrs. Y was delivered of a normal baby. *Baby Y*:—Group O, apparently Rh-negative; P. Direct Coombs negative. Its cells were agglutinated by the mother's serum at 4° C., room temperature, and 37° C. *Mrs. Y*:—No change in the strength of the antibody, nor could it be enhanced.

Sept. 5.—Mrs. Y:—No change in the strength of the antibody. *Baby Y*:—Haematological reports normal; no signs of haemolytic disease of the newborn.

Discussion

The finding of these antibodies in the sera of two pregnant women immediately raises the questions: Are these antibodies immune or naturally occurring? and, Can they give rise to haemolytic disease of the newborn? The following criteria were used in order to arrive at a decision: (*a*) Could the titre of the antibody be enhanced? (*b*) Was there evidence of an incomplete form of the antibody? (*c*) The direct Coombs test on the infants' red cells. (*d*) The clinical condition of the children.

In investigating the possibility of enhancing the antibody titre the technique used was that first described by Boorman and Dodd (1945). They found that immune sera could be enhanced when normal human sera were used as the diluent in place of saline, whereas naturally occurring agglutinins showed no enhancing. Boorman and Dodd applied their technique to 81 immune and 14 naturally occurring agglutinins and included in their series cold agglutinins but not anti-P. Their technique has been confirmed in this laboratory. Although there were fluctuations in the titre of the antibodies in the two cases described, there was no evidence of enhancing when pooled human serum from Group O p donors was used as the diluent.

In cases of Group O people whose anti-A has been stimulated as a result of immunization with A-group-specific substance it has been shown that their sera contain an incomplete form of the alpha agglutinin (Boorman and Dodd, 1946). This could be detected by destroying the complete agglutinin with heat and the finding of the incomplete form by the Coombs reagent. In the two sera here reported the complete agglutinin was destroyed by heating at 70° C. for 10 minutes and there was no evidence of an incomplete form of anti-P in that P cells were not sensitized when tested with Coombs reagent.

The second use of the Coombs reagent is for the detection of *in vivo* sensitization by a maternal antibody of the red blood cells of infants with haemolytic disease. These sensitized cells are agglutinated by an anti-human-globulin serum, whereas the cells of normal infants are not agglutinated. In the two cases here described the red cells of the infants were tested as soon as possible after birth and there was no evidence of sensitization. Finally, the medical officers in charge of the cases reported that the infants showed no clinical signs of haemolytic disease and developed normally.

These investigations suggest that the anti-P agglutinins were of natural occurrence and may be compared to the naturally occurring agglutinins anti-A and anti-B, which have occasionally been responsible for haemolytic disease of the newborn. The protective factors in heterospecific blood group pregnancies were studied by Tovey (1945). His assessment of the main mechanisms operating individually or in combination to protect the foetus may apply to these cases—namely, lack of permeability of the human placenta to these agglutinins, neutralization of the incompatible antibody crossing the placental barrier by group-specific substances in the foetal plasma, lack of sensitivity of the foetal erythrocytes towards the incompatible agglutinins, and diminished activity of the agglutinins at body temperature.

It would appear from these two cases that naturally occurring anti-P, although of sufficient strength to be active at 37° C. (Kettel, 1930: the thermal amplitude is usually directly proportional to the titre of the cold agglutinin), is unlikely to be a causative agent in haemolytic disease of the newborn. Conclusive evidence may be derived from further studies.

Summary

Two cases of pregnant women in whose sera the agglutinin anti-P was found are reported.

Evidence suggesting that these antibodies were of natural occurrence is offered.

It is suggested that this naturally occurring antibody is not of pathological significance.

The serological investigations were carried out in the laboratory of the National Blood Transfusion Service, Sheffield, and my sincere thanks are offered to the late and present blood transfusion officers (Dr. E. F. Aubert and Lieutenant-Colonel R. H. Malone) for their discussions and for permission to publish this paper. To Drs. J. B. Cochrane and R. G. Cooke, of Nottingham City and Derby City Hospitals, for their co-operation, and to Drs. A. E. Mourant and R. R. Race, of the Lister Institute, for their confirmation of the anti-P sera.

References

Aubert, E. F., *et al.* (1945). *British Medical Journal*, **2**, 648.
Boorman, K. E., *et al.* (1942). Ibid., **2**, 535, 569.
—— *et al.* (1945). *Nature*, **156**, 663.
—— and Dodd, B. E. (1946). Ibid., **158**, 589.
Diamond, L. K., and Abelson, N. M. (1945). *J. Lab. clin. Med.*, **30**, 204, 668.
Kettel, K. (1930). *Undersogelser over Kuldehaemagglutininer*, p. 87. Copenhagen. Quoted in A. Wiener's *Blood Groups and Blood Transfusion*, 3rd ed., p. 45.
Leading article (1945). *British Medical Journal*, **2**, 535.
Levine, P., *et al.* (1941). *J. Amer. med. Ass.*, **116**, 825.
Nigg, C. (1930). *J. Immunol.*, **19**, 1.
Race, R. R., *et al.* (1946). *Lancet*, **1**, 264.
Tovey, G. H. (1945). *J. Path. Bact.*, **57**, 295.
Wiener, A. S. (1943). *Blood Groups and Blood Transfusion*, 3rd ed., p. 256. Springfield, Ill.
Wintrobe, M. M. (1946). *Clinical Haematology*, 2nd ed., p. 559. Philadelphia.

THE HUMAN LOUSE IN TRANSMISSION OF T. DUTTONI IN NATURE

BY

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Hitherto there has been no evidence that the human louse can act as a vector of *Treponema duttoni* in nature. Even in the laboratory Nicolle and Anderson (1927) were unable to infect lice with a Congo strain of the parasite. Recently, however, Heisch and Garnham (1948) have shown that under laboratory conditions several strains of East African *T. duttoni* can infect and undergo metacyclic development in lice, and that the infection can be transmitted by inoculation.

The present paper reports the discovery of natural infections in lice of spirochaetes indistinguishable from *T. duttoni*. The only other worker to have experimented along these lines is Blanchard (1914), who in the Congo inoculated mice with lice collected from patients infected by *T. duttoni*, but with negative results.

Lice were collected from the clothes of patients infected with *T. duttoni* at Kisumu and other places in Kenya Colony where the disease is endemic; after being kept for varying periods they were emulsified with saline and inoculated into rats and mice. Lice were collected from seven patients, and four of the batches proved infective.

Case 1.—Ten lice (L19) were collected on Aug. 26, 1946, from the clothing of a Kikuyu woman with *T. duttoni* in her blood. The following day one louse was smeared on a slide and stained; no spirochaetes were seen. On the 28th seven lice remained; these were emulsified and inoculated into Mouse 673, but infection did not result.

Case 2.—At Meru six lice (L26) from the clothing of a child aged 1 year with relapsing fever were emulsified and inoculated into Mouse 1460, but no infection resulted.

Case 3.—Sixteen lice (L26) from the trousers of a sophisticated Tanganyikan African suffering from relapsing fever, and with quite numerous spirochaetes in his blood, were emulsified and inoculated into Mouse 1593; there was no infection.

Case 4.—Eight lice (L30a) were collected at Kisumu from the clothes of a patient with spirochaetes in his blood. Six hours later they were emulsified and inoculated into Rats 2574 and 2548, both of which became infected.

Case 5.—Two lice (LKu8) were removed from the head of a child of the Jaluo tribe at Kisumu with spirochaetes in his blood. After five hours they were emulsified and inoculated into Rat Ku19, which subsequently became infected.

Case 6.—Forty-eight lice (LKu9) were collected from an adult male of the Jaluo tribe at Kisumu with relapsing fever spirochaetes in his blood. Twenty-five of these were inoculated into a rat after forty-eight hours and the remaining 23 were inoculated into Rat Ku24 after seventy-two hours. Both these animals became infected.

Case 7.—Sixteen lice (LKu10) from the clothes of a Jaluo male aged 18 with spirochaetes in his blood were emulsified and inoculated after twenty-seven hours into Rat Ku25, which subsequently became infected.

Discussion

The recovery of spirochaetes from four out of seven batches of lice collected from patients infected with *T. duttoni* is further evidence that the louse is able to act as a vector of this organism in nature. It might be objected that the infections caused in mice and rats were examples of mechanical transmission, but this seems unlikely, as the lice were kept for periods up to three days before inoculation. The criticism might also be made that the strains recovered were in reality not *T. duttoni* but some other species of spirochaete. However, the strains proved to be *T. duttoni*, because they were capable of infecting *Ornithodorus moubata*, they caused typical infections in laboratory animals, and they were markedly neurotropic (residual brain infections in rats and mice).

It is strange that epidemics of louse-borne *T. duttoni* have rarely if ever been known to occur. This may be due to the existence of an immunity in the populations of endemic areas or because the louse is a less efficient vector of *T. duttoni* than of *T. recurrentis*.

Summary

Of seven batches of lice collected in Kenya Colony from patients infected with *T. duttoni* four were found to be infective when inoculated into rats and mice.

The spirochaetal strains recovered proved to be *T. duttoni* and not any other species of spirochaete.

Although it is probable that the louse can act as a vector of *T. duttoni* in nature, it is not known how often or with what degree of facility this occurs.

I have to thank the Director of Medical Services, Kenya, for permission to publish this paper. I am also much indebted to Mr. W. E. Grainger for helping me with the transmission experiments.

REFERENCES

Blanchard, M. (1914). *Ann. Hyg. Méd. colon.*, **17**, 81.
Heisch, R. B., and Garnham, P. C. C. (1948). *Parasitology*, **38**, 247.
Nicolle, C., and Anderson, C. (1927). *Bull. Inst. Pasteur*, **25**, 657.

MENINGOCOCCAL CONJUNCTIVITIS

BY

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AND

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An intracellular Gram-negative diplococcus in the exudate of a purulent conjunctivitis is often assumed to be a gonococcus, but full bacteriological investigation sometimes shows it to be a meningococcus. There are numerous references in the literature to the presence of meningococci in the conjunctiva, but the methods of identification employed in the earlier cases, at least, are not now acceptable.

Case Report

A boy aged 3½ years attended the casualty department with a gross purulent conjunctivitis of the left eye of one day's duration. The cornea was clear and the interior of the eye normal. The condition was completely cured within eight days by local treatment with 30% sulphacetamide ("albucid") hourly, penicillin in saline (2,000 units per ml.) every half-hour, atropine, and the provision of coloured glasses. The right eye was healthy.

Bacteriology.—When first seen films from the left eye showed pus cells with numerous intracellular and extracellular Gram-negative diplococci, and cultures yielded a copious growth of these and a scanty one of *Staphylococcus aureus*. The Gram-negative cocci were strict aerobes, grew only on media containing blood or serum, and fermented glucose and maltose but not lactose or saccharose. Their colonies were denser and more luxuriant than those of gonococci, and suspensions of them were agglutinated to titre by the Standard Laboratory's (Griffith) Group II meningococcal antiserum and to 1 in 25 by Griffith's Group I antiserum. The organism was therefore identified as *Neisseria meningitidis* (Griffith's Group II). The right eye did not yield the neisseria. The nasopharynges of the patient, his parents, and five sisters were all examined for neisseriae without success.

Discussion

During or immediately preceding cerebrospinal meningitis, meningococci have often been found in the conjunctiva. In some instances the eyes were apparently healthy (Randolph, 1893; McKee, 1908, 1909), but others showed a purulent conjunctivitis (Koplik, 1904). This type of conjunctivitis has become progressively rarer with treatment by specific antiserum and later by sulphonamides, so that it is now practically never observed (Lewis, 1931; Tillett and Brown, 1935). McKee (1908) discussed the probabilities of whether the conjunctiva acted as a portal of entry for the neisseriae or became invaded secondarily.

The occurrence of the conjunctivitis immediately before the onset of meningitis (Koplik, 1904) and its appearance in nurses attending patients with meningitis (Smith, 1905; Reese, 1936) support the first contention. There is no inherent reason why the conjunctiva should not, like the nasopharynx, harbour and even be infected by air-borne meningococci, but obviously the chance is less, inasmuch as a current of air containing the organisms is not drawn by each respiration over the conjunctiva. Meningitis resulting from meningococci which have gained access to the body via the conjunctiva, if it occurs at all, must be very rare compared with the usual sequence of events described by Wilson and Miles (1946), beginning with entry of the meningococci into the nasopharynx and their spread to the meninges either direct or by the blood stream.

Conjunctivitis due to *N. meningitidis*, unassociated as in this case with meningitis in either the host or any of his known immediate contacts, has often been recorded, and Stuart and McWalter (1948) give more than a dozen references. They themselves described six cases, from which they isolated five strains. Four of these were investigated serologically and, in contrast to the case here recorded, all belonged to Group I. It is a matter for speculation whether in the absence of treatment these patients would subsequently have developed meningitis. At present meningitis is usually due to Group I, and most of the strains found in the nasopharynges of persons who have not been in contact with cases of meningitis belong to Group II (Mackie and McCartney, 1948).

In the interests of public health as well as of the patient himself, rapid identification of the organism in neisserial conjunctivitis is of obvious importance. Difficulties due to absence of facilities for immediate culture may be overcome by the use of the thioglycollate method of transport (Stuart, 1946). As Stuart and McWalter suggest, meningococcal conjunctivitis is more frequent than commonly imagined, is often erroneously diagnosed as gonococcal, and may be as severe clinically as gonococcal ophthalmia. Although both conditions respond to sulphonamides, the sociological "follow-up" required is entirely different.

Summary

A case of purulent conjunctivitis due to *N. meningitidis* Group II is recorded and discussed. Contacts were examined for neisseriae without success.

Our thanks are due to Drs. A. Rugg-Gunn and H. Claff for the clinical details.

REFERENCES

Koplik, H. (1904). *Med. News*, **84**, 1065.
Lewis, P. M. (1931). *Sth. med. J.*, **24**, 101.
McKee, H. (1908). *Ophthal. Rec.*, **17**, 438.
—— (1909). Ibid., **18**, 304.
Mackie, T. J., and McCartney, J. E. (1948). *Handbook of Practical Bacteriology*, 8th ed. Edinburgh.
Randolph, R. L. (1893). *Bull. Johns Hopk. Hosp.*, **4**, 59.
Reese, F. M. (1936). *Amer. J. Ophthal.*, **19**, 780.
Smith, D. (1905). *Arch. Ophthal.*, **34**, 481.
Stuart, R. D. (1946). *Glas. med. J.*, **27**, 131.
—— and McWalter, D. (1948). *Lancet*, **1**, 246.
Tillett, W. S., and Brown, T. McP. (1935). *Bull. Johns Hopk. Hosp.*, **57**, 297.
Wilson, G. S., and Miles, A. A. (1946). Topley and Wilson's *Principles of Bacteriology and Immunity*, 3rd ed. London.

Medical Memoranda

Pulmonary Tuberculosis Complicated by Amoebic Hepatitis

The following case history may be of general interest because of its differential diagnostic problem, which is somewhat unusual, and its moral, which is becoming increasingly common.

CASE HISTORY

The patient, a married woman aged 36, has been suffering from pulmonary tuberculosis for at least ten years. A left-sided artificial pneumothorax was induced some two years ago, and she recently came for treatment of a fresh spread in the right lung. She had had appendicectomy twenty years ago.

For the last eight years she has been complaining of sharp, dragging pains in the right iliac fossa and lately also in the right epigastric region; the pains were independent of food, were worse when she stood up, and had grown in intensity during the last few years. There was moderate flatulence, but the bowels were regular and the stools macroscopically normal. She gave a vague history of three or four sharp attacks of diarrhoea in the course of the last nine years. The first attack, lasting four or five days, was in 1939; the others, lasting two or three days, occurred between 1939 and 1944. She thinks that on two occasions she passed some blood and mucus.

The patient has never been in tropical countries, and, apart from occasional pre-war trips to Paris and the South of France, her only foreign journey was a summer cruise in Dalmatian waters in 1937. The abdominal symptoms had been variedly diagnosed as those of duodenal ulcer and abdominal tuberculosis. They have not responded to treatment.

On examination the caecum was ballooned, doughy and tender, and could be elicited by pressure on the colon as far as the splenic flexure. No mass or rolled-up omentum could be palpated. A small area of localized tenderness, which had been unknown to the patient, could be detected in the right lobe of the liver, about 1 in. (2.5 cm.) to the right of the xiphoid process. This tenderness was more pronounced in the intercostal space above than on the palpable liver-edge. On screening, the right diaphragm was observed to be slightly elevated and its movement was somewhat diminished. Sigmoidoscopy disclosed a congested oedematous rectal mucosa, several submucous haemorrhages on the haustra, and a few small round healed ulcers at 4 in. (10 cm.).

Investigation revealed slight hypochromic anaemia; W.B.C. 3,600, with normal distribution; van den Bergh quantitative test, 0.8 mg. per 100 ml.; nicotinic acid tolerance (Erdei, 1947, 1948), 450 mg.; galactose tolerance and thymol turbidity normal; cephalin-cholesterol test, weakly positive. On examination of the faeces two typical *Entamoeba histolytica* cysts could be demonstrated in the sixth specimen.

A course of ten injections of emetine, with concurrent penicillin and diodoquin and consecutive emetine bismuth iodide and carbarson, was given. After the second emetine injection the liver became very tender, but all tenderness disappeared after the sixth injection, thus justifying the diagnosis of chronic amoebiasis with hepatitis.

Further attacks of diarrhoea occurred some time after the improvement from the anti-amoebic treatment. First *Giardia lamblia* was demonstrated; afterwards, when the diarrhoea became worse and sigmoidoscopy revealed superficial ulceration of the rectal mucosa, *Shigella flexneri* (Newcastle-Manchester strain) was grown from a sigmoidoscopy swab. Several stool cultures proved to be negative. Sulphasuxidine treatment was given, and the patient is now free of the complaint, and her motions do not exceed two daily.

COMMENT

In the above case abdominal tuberculosis figured much too prominently in the differential diagnosis, and the correct diagnosis was arrived at only because it was realized that chronic amoebiasis is an increasingly common condition which must be considered when dealing with a very wide range of abdominal and general conditions. This case also demonstrates the value of a rapid liver-function test such as that of nicotinic acid tolerance.

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REFERENCES

Erdei, A. (1947). *British Medical Journal*, **1**, 822.
—— (1948). *Lancet*, **1**, 368.

Reviews

COLON AND RECTUM

The Surgery of the Colon and Rectum. By Sir Hugh Devine, M.S., F.R.C.S., F.R.A.C.S., F.A.C.S., and John Devine, M.S., F.R.C.S., F.R.A.C.S., F.A.C.S. (Pp. 373; 277 illustrations (some in colour). 52s. 6d.) Bristol: John Wright and Sons. 1948.

The work of Sir Hugh Devine in advancing the surgery of the large bowel is already well known. With John Devine as a collaborator in writing this new book he offers all the wisdom which a wide experience of this realm of surgery has developed in an alert and inventive surgeon. We believe this to be an important book which will be highly valued and appreciated by operators both young and old.

Perhaps the outstanding lesson of these pages is that the mortality of colonic operations could be reduced considerably if the bowel were "defunctioned" by an adequate colostomy and chemotherapeutically prepared to reduce possible infection to a minimum. This is, of course, no more than a reiteration of the teachings of Paul and Mikulicz, but the technique has been improved by performing a more perfectly designed colostomy followed by local use of the insoluble sulphonamides. The results recorded here show that these modifications are of real value, and a large part of the book is about the practical application of the technique to various diseases of the colon and rectum. The authors describe the useful Devine operating frame; it is a great help in providing the extensive exposures necessary in this branch of surgery. Another device described is an ingenious pump for the direct transfusion of blood, a procedure now rarely used in Britain.

It is interesting to read that appendicostomy is revived as a treatment for some cases of ulcerative colitis when combined with the use of sulphonamides, although colectomy, partial or complete, by the new technique is performed for most cases. In the treatment of Hirschsprung's disease, too, the authors recommend total colectomy; the results of sympathectomy in these cases "afford little encouragement to continue its use." Not all surgeons would agree. Incidentally, we found the arguments about the experimental work on the autonomic control of the colon rather ambiguous in that the experiments showing that the lower bowel receives a motor (accelerator) supply from the parasympathetic are adduced as evidence against performing sympathectomy, whereas it would seem logically to be evidence in favour, at least if the conception of an antagonism of the two sides of the autonomic supply is accepted. The phraseology here and there sounds rather unusual to the English ear, and the occasional use of such words as "ectropionises" would raise a cry of despair from our purists. The book is well produced, of handy size, and copiously illustrated. We can highly recommend it.

NORMAN C. LAKE.

QUICK DIAGNOSIS OF TUMOURS

Identification of Tumors. Essential Gross and Microscopic Pathologic Features Systematically Arranged for Easier Identification. By N. Chandler Foot, M.D. (Pp. 397; 241 illustrations. 36s.) Philadelphia and London: J. B. Lippincott Company.

The motive behind this book is good; it is intended to be a vade-mecum for the microscopist, providing a quick diagnostic aid in much the same way as a botanist uses a pocket flora in the field. Without preambles about general theory, classifications, carcinogens, and so forth, the author goes straight to the description of types. Part I is on tumours of general distribution, Part II on those of special systems and organs. In each type described there are brief notes under side-headings in bold type indicating the source, site, clinical features, pathology, and differential diagnosis. The illustrative photomicrographs are abundant, but could be better interpreted if the stains used and the magnifications were stated. Technical notes and a tabulated arrangement of the tumours described are appended.

Attractively set out, this book would achieve its objective but for the presence of far too many statements to which exception may be taken. Thus (p. 208), the author gives the normal weight of a parathyroid as 3 g.; he states that carcinoma of the gall-bladder is extremely rare (p. 158); he lists the ileum (p. 144) as a site of adenocarcinoma, which is admitted to be less often so than the colon, but presumably not the excessively rare phenomenon which in fact it is generally considered to be. Apart from the malignant argentaffinoma, primary epithelial malignant tumours of the ileum are virtually unknown. Further instances of this kind could be added. There are also serious omissions. For instance, to take a few at random, the author does not mention the common endochondromata of the phalanges, whereas he gives pride of place to those of the articular cartilages—an unlikely site. In describing primary carcinoma of the liver (p. 154) he does not mention its common association with cirrhosis. He states that carcinoma of the bronchus (p. 111) metastasizes to the bones, suprarenals, spleen, and kidneys, but does not add the brain, liver, and pancreas, which are so commonly involved; nor does he mention on p. 129 the interesting sex differences in the distribution of carcinoma of the oesophagus.

The author's use of words, too, is often puzzling. Thus the term "metaplasia." appears both where one would expect it and also where most pathologists would say "anaplasia." It is to be feared that the student would find this book difficult to use in conjunction with the teaching of other textbooks.

DOROTHY S. RUSSELL.

SIGNS AND SYMPTOMS

Signs and Symptoms. Their Clinical Interpretation. Edited by Cyril Mitchell MacBryde, A.B., M.D., F.A.C.P. Second impression. (Pp. 439; 74 illustrations in black and white and 12 subjects in colour on 6 plates. £3 12s.) Philadelphia and London: J. B. Lippincott Company. 1948.

The recent development of laboratory and radiological methods of diagnosis has not diminished the need for expert clinicians. Useful though special tests are, they must be interpreted in relation to the patient's history and the findings on clinical examination, which remain as much as ever the keystone of medical practice. In MacBryde's own words: ". . . even to-day the accomplished physician can learn more in the majority of cases from what the patient says, and the way he says it, than from any other avenue of inquiry." In making a clinical assessment there are certain symptoms and signs which claim our attention because of their frequent occurrence and significance. This work is a collection of 26 articles, each on an important symptom or sign, from a team of distinguished contributors. It is excellent. By confining their attention to a few topics the authors have been able to discuss them fully, and there are few of us who could read this book without gaining a better understanding of phenomena that we encounter daily.

Where it strikes an original note is that the authors summarize the results of experimental work on their subjects and thus describe the processes concerned in the production of the particular symptom or sign. In other words, they have shown how clinical observations may yield information about the disturbed physiological processes of which symptoms and signs are the overt manifestations. Clinical medicine continues to advance not because we observe more exactly than older clinicians but because we are able to relate our observations to more precise scientific knowledge than was available to them, a circumstance well illustrated by this book.

Some of the articles are outstandingly good. That on headache by H. G. Wolff is largely derived from his own original studies and is admirable. MacBryde's article on dehydration presents in simple terms the modern conception of water and salt balance, and it is matched by an equally clear account of oedema by Wood and Sylvester. In his essay on sore mouth and sore tongue Vilter shows the refreshing effect of pouring the new wine of scientific research into one of the oldest bottles of clinical medicine. But all the articles are interesting and it is perhaps invidious to mention any specifically. The production is as good as the contents deserve, so that the reading of this book yields a double pleasure.

SIDNEY TRUELOVE.

PECKHAM HEALTH CENTRE

Health the Unknown. The Story of the Peckham Experiment. By John Comerford. (Pp. 144. 7s. 6d.) London: Hamish Hamilton.

This little book, in which the author describes the work of the Peckham Health Centre, is addressed to the layman, and it contains nothing that will be unfamiliar to medical men who have read Dr. Scott Williamson's books. It is a lively and well-written account which adds a small contribution to the considerable publicity which the Centre is now receiving. In one respect the book is unfortunately misleading. It represents the Centre as likely to be self-supporting, while the truth is that in the latest year's working the expenditure was £29,000 and the members' subscriptions provided but £3,500. It is apparent that the experiment cannot continue without Government support.

To many doctors, as to the reviewer, it has always seemed that the medical work of the Centre was much less important than its sociological activities. The main medical conclusion which emerges from the work at the Centre is that doctors, given time and improved facilities (especially adequate clinical pathology), can do better diagnostic work than is now attained in urban general practice. Moreover, some of its medical publications can be justly criticized. As a sociological experiment, however, it has already proved its value. It has demonstrated the biological importance of the family as a sociological unit; it has shown the need for group activities in the full development of the human being; most important of all, it has provided the only experimental station where mankind can pursue one aspect of his proper study—man in his environment. It would be a pity if this experiment were allowed first to languish and then to die.

D. V. HUBBLE.

PROBLEMS IN LIFE INSURANCE

Transactions of the Association of Life Insurance Medical Directors of America. Edited by Harry E. Ungerleider, M.D. Fifty-fifth Annual Meeting. Volume XXX. (Pp. 378; illustrated. No price given.) New York City: Recording and Statistical Corporation, P.O. Box 594, Newark, N. Jersey.

This is a verbatim report of a meeting which took place in October, 1946. Various topics were discussed in relation to life insurance—rheumatic fever; electrocardiography (136 pages); thrombosis from the physiological viewpoint (Dr. C. H. Best); digestive ulcers, their significance and prognosis (Dr. B. B. Crohn); veterans as a medical underwriting problem; wartime experience with tropical diseases and their future significance; industrial medicine; chemotherapy; and finally an open forum which included a discussion on the insurability of the diabetic. The last 80 pages give membership details, cumulative indices, etc. Here is an extract illustrating the value of the text: "The life expectancy of the peptic ulcer case is impaired in comparison to the normal life expectancy of the control population by about 1½%. In contrast to diabetes, to rheumatic heart disease, and similar chronic maladies the ulcer case offers a low rate of risk. The high incidence of ulcer in the general population (5–10%) creates for the actuarian and for the medical director of life insurance companies a material problem. But the overall small risk to life offered by the ulcer applicant for insurance compensates for the magnitude of this number and brings assurance that the risk to life involved by the disease is in inverse proportion to the widespread distribution of the malady."

Physicians will appreciate Dr. Best's short and admirably clear account of the use of heparin and dicoumarol. They will also find the paper on rheumatic fever of considerable interest with its discussion on the significance of systolic and diastolic murmurs, and they will appreciate the account of chemotherapy, in particular the section on the use of streptomycin in urinary infections and infections of the typhoid group, although the figures given are now out of date. In the main this volume will interest the experts, medical and actuarial, at the headquarters of the various life insurance companies.

WILLIAM BROCKBANK.

BOOKS RECEIVED

[*Review is not precluded by notice here of books recently received*]

25e Anniversaire de L'Institut d'Hygiène et de Médecine d'Outre Mer de L'Afrique du Nord 1923-1948. (Pp. 206. No price.) Algiers: Imprimerie Nord-Africaine. 1948.

Includes papers on syphilis and tuberculosis in Algeria.

Venins de Serpents et Antivenins. By P. Boquet. (Pp. 157. No price.) Paris: Flammarion. 1948.

A description of snake venoms and the toxic symptoms they cause, with an account of treatment.

Le Corps Médical et L'Assurance-Maladie. Syndicat des Médecins du Grand-Duché de Luxembourg. (Pp. 104. No price.) Luxemburg: Saint-Paul. 1948.

An account of health insurance in Luxemburg.

Über Neurome und Neuro-Fibromatose, nach Untersuchungen am Menschlichen Magendarmschlauch. By F. Feyrter. (Pp. 125. Sch. 35.) Vienna: Wilhelm Maudrich. 1948.

A monograph of the pathology and symptomatology of neuromas and neurofibromas.

Malaria, Filariasis, and Yellow Fever in British Guiana. By G. Giglioli, M.D., M.R.C.P., D.T.M.&H. (Pp. 226. No price.) Mosquito Control Service, British Guiana. 1948.

A report on the control of these diseases by D.D.T.

Science News. Edited by J. L. Crammer (Pp. 160. 1s. 6d.) London: Penguin Books. 1948.

Recent advances in science described for the layman.

The Biochemical Reactions of Chemical Warfare Agents. Edited by R. T. Williams. (Pp. 73. 5s.) Cambridge: University Press. 1948.

A symposium at which much experimental work done during the war was discussed.

Laboratory Technique in Biology and Medicine. By E. V. Cowdry. 2nd ed. (Pp. 269. 22s.) London: Baillière, Tindall, and Cox. 1948.

This edition includes new material, particularly on microchemical technique.

Heart. A Physiologic and Clinical Study of Cardiovascular Diseases. By A. A. Luisada, M.D. (Pp. 653. 55s.) London: Baillière, Tindall, and Cox. 1948.

An account of heart disease intended primarily for the general physician.

Remington's Practice of Pharmacy. By E. F. Cook, P.D., Ph.M., M.Sc., and E. W. Martin, Ph.C., B.Sc. 9th ed. (Pp. 1,511. 90s.) London: Interscience Publishers. 1948.

A treatise on dispensing with description of medicinal substances, their properties, uses, and doses.

Gynaecological Histology. By Josephine Barnes, M.A., D.M., M.R.C.P., F.R.C.S., M.R.C.O.G. (Pp. 242. 30s.) London: Harvey and Blythe. 1948.

A profusely illustrated guide to the histology of normal and abnormal tissues seen in gynaecological practice.

The National Health Service Act, 1946. By S. R. Speller, LL.B. (Pp. 497. 42s.) London: H. K. Lewis. 1948.

The Act and a number of regulations are reprinted and annotated.

A Textbook of Clinical Pathology. Edited by F. P. Parker, M.D. 3rd ed. (Pp. 1,023. 50s.) London: Baillière, Tindall and Cox. 1948.

This is a largely revised edition of the textbook formerly edited by Dr. Roy Kracke.

The College Curriculum in Hospital Administration. (Pp. 107. $2.) Chicago: Physicians' Record. 1948.

The final report by the American Joint Commission on Education.

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ALLERGY, RHEUMATIC FEVER, AND NEPHRITIS

Both rheumatic fever and nephritis belong to the group of diseases whose aetiology is still obscure. Most physicians believe that they are in some way related to bacterial infection, though Gordon[1] has recently suggested that a virus is the cause of rheumatic fever. The frequency with which a bacterial infection, usually a streptococcal sore throat, precedes a clinical attack of either of these diseases, and the fact that only rarely can organisms be isolated from the heart or kidney, have suggested that the lesions observed are the result not of direct bacterial injury but of an acquired hypersensitivity of the tissues to the products of the bacteria. The latent period that usually exists between the infection and subsequent renal or cardiac complication is compatible with such a view, since this would represent the time required for sensitization to take place. Two distinct immunological reactions have been suggested as causing the lesions in diseases attributed to allergy. In the first the injury is thought to arise as a result of interaction between antigen and specific antibody which has previously become fixed to the sensitized tissue. In this type of reaction, on which the various diagnostic skin tests such as the tuberculin test are based, no chemical relationship between the antigen and the sensitized tissue is postulated. The second type of reaction depends on the formation of specific anti-organ antibodies; injury results from the interaction between these and the organ concerned.

The first type of reaction has been most often used in experiments to produce cardiovascular lesions resembling those of rheumatic fever. The parenteral administration to rabbits of large quantities of horse serum has been shown by Rich and Gregory[2] to be often followed by lesions in the myocardium, endocardium, and valves very similar to those of rheumatic fever. The resemblance is remarkably close, even including the typical lesions seen in the coronary arteries and occasionally in the lungs. Arterial necroses characteristic of periarteritis nodosa also occur in these animals. As long ago as 1904 Aschoff[3] described similar arterial necroses in cases of rheumatic fever. The experimental production of nephritic lesions by similar methods has not met with anything like the same success, and the disease was not convincingly reproduced until 1933. Masugi[4] was then able to show that the second type of reaction, hypothetical though it was, could be successfully applied to the production in experimental animals of an acute glomerulonephritis which closely resembled the human disease both clinically and pathologically. He produced a nephrotoxic serum in ducks by intraperitoneal injection of rabbit's kidney. Subsequent injection of the duck serum intravenously in rabbits caused acute nephritis. It must be admitted, however, that this experiment seems to bear little relationship to the mechanism by which nephritis is naturally produced in man. Since the antigenic stimulus exerted by any substance is closely related to its "foreignness," attempts to produce antibodies to organs from an animal of the same species almost invariably fail. If specific organ antibodies are really responsible for the lesions in nephritis and rheumatic fever then either some profound change must occur in the antibody-producing mechanism or in some way the animal's organ protein is rendered "foreign."

Cavelti[5 6] has recently claimed that incubation of organ extracts with streptococci will so alter the antigenic nature of the former as to render them "foreign" to animals of the same species, with the consequence that when they are injected specific antibodies are formed. He also claims that the antibodies produced against these modified organ antigens will react with extracts of the unaltered organs. Thus incubation of rat kidney with streptococci so alters the renal protein as to render it antigenic when injected into other rats. Further, the antibodies so produced react specifically with extracts of normal rat kidneys, and such antisera given intravenously to normal rats are stated to have produced the clinical and pathological signs of glomerulonephritis. Cavelti also carried out a similar experiment in which heart extracts replaced the kidney extracts; the lesion resulting from the parenteral administration of this antiserum resembled acute rheumatic carditis. On the basis of these experiments Cavelti has suggested that the streptococcal infection that usually precedes acute rheumatic fever or acute nephritis results in an interaction *in vivo* between streptococcal products and organ antigens; that during the quiescent phase antibodies are being produced against these modified organ antigens; and that when these reach an appropriate level the interaction between these antibodies and the organ in question results in disease. In substantiation of this theory he maintains[7] that 12–48 hours after focal streptococcal infection in rats organ antigens of heart and kidney are demonstrable in the circulating blood and that 7–12 days later antibodies to these antigens can be detected. In none of these animals, however, were lesions subsequently found in the heart or kidneys.

That the two types of allergic mechanism here discussed are fundamentally similar is suggested by the work of Kay.[8] He noted, in repeating Masugi's work, that an interval of approximately seven days occurred between the injection of the nephrotoxic duck serum and the appearance of nephritis in the rabbits. He therefore suggested that during this interval the rabbit was producing antibodies to the

1 *Lancet*, 1948, **1**, 697.
2 *Bull. Johns Hopk. Hosp.*, 1943, **73**, 239.
3 *Verh. dtsch. path. Gesellsch.*, 1904, **8**, 46.
4 *Beitr. path. Anat.*, 1933, **91**, 82.
5 *Arch. Path.*, 1945, **39**, 148, and **40**, 158 and 163.
6 Ibid., 1947, **44**, 1.
7 *Arch. Path.*, 1947, **44**, 119.
8 *J. exp. Med.*, 1940, **72**, 559.
9 *Ann. rheum. Dis.*, 1948, **7**, 97.
10 *Helv. med. Acta*, 1945, **12**, 547.
11 Ibid., 1946, series A, **13**, 456.
12 *Schweiz. med. Wschr.*, 1947, **77**, 1069.

duck globulins which include the anti-kidney antibodies, and that renal lesions developed when the rabbit antibodies reacted with the duck globulins which became fixed in the rabbit's kidneys. In other words, in both types of mechanism the lesion is caused by the union of antibody with antigen in or on tissue cells, the site of reaction depending upon the site of fixation of antibody or antigen. In most experiments of this kind antibody is usually localized in the cardiovascular system, and the subsequent lesions are therefore cardiovascular. The experiments of Masugi and Cavelti indicate two methods by which antibody may be localized in other sites. There is obviously scope for further work on the factors determining localization and hence the site of interaction of antigen and antibody.

If it be accepted that rheumatic fever and nephritis occur as a result of allergic hypersensitivity, then the next step in the investigation of these diseases should be the identification of the antigens responsible. In the case of rheumatic fever the evidence is strongly suggestive that the antigen is a part or product of haemolytic streptococci. The relationship of acute nephritis to streptococcal infections is almost as close. The difference in the two diseases must therefore reside either in the particular streptococcal fraction constituting the antigen or in other factors that determine differences of localization of antibody. Wallis[9] similarly suggests that the differences between rheumatoid arthritis and acute rheumatic fever are fundamentally due to differences in the reacting antigen. Much remains to be learned about how the reaction between antigen and antibody injures the tissue in which the reaction occurs. That histamine is amongst the products liberated and responsible for some of the characteristic pathological manifestations of these reactions is now well established. It is therefore of great interest to the pathologist and the clinician that the antihistamine drugs have been used with some success in both nephritis and post-streptococcal carditis. Reubi[10] and Steinmann and Reubi[11] found these drugs of value in experimental and in human nephritis, and Steinmann[12] has recently reported good results with "antistin" in cases of the delayed form of myocarditis that may follow scarlet fever. Elsewhere in this *Journal* we publish a paper by Professor John Craig and Drs. N. S. Clark and J. D. Chalmers which is the first report of the use in this country of antihistamine drugs in the treatment of acute nephritis. As the authors admit, the number of cases and controls is far too small for definite conclusions to be drawn, but the difference in response as judged by duration of clinical signs is so striking that the authors are certainly justified in appealing for a wider clinical trial of this form of treatment. Moreover, since one of the greatest dangers in acute nephritis is the residue of permanent renal damage, any treatment that significantly reduces the duration of the acute phase merits serious consideration. Since it is extremely unlikely that the lesions of the heart or kidney that result from allergic hypersensitivity are entirely due to local histamine production, favourable reports such as these were unexpected. Should the results be confirmed they will provide strong support for the theory that nephritis and rheumatic fever are allergic conditions.

INTERNATIONAL SANITARY CONVENTIONS

From time to time in this *Journal* it has been pointed out that the various international conventions which are supposed to restrict the spread of infectious disease from one country to another and thus to safeguard international health are far from effective. The first International Sanitary Convention, it may be recalled, was signed in 1903 with the object more especially of restricting the spread of cholera, which in the nineteenth century had become a menace to the whole world. The 1903 Convention was succeeded by that of 1912 and that of 1926, which was modified in its turn in 1938. Cognizance was taken of yellow fever in 1912 and of plague and typhus in 1926. The rapid development of aviation led to the International Convention for the Sanitary Control of Aircraft in 1933. During the war many of the provisions of this convention were unworked and were seen to be obviously unworkable; it was therefore modified in 1944, as was also the Sanitary Convention of 1926–38. The man in the street might therefore well imagine that the frequent modifications and adaptations undergone by the conventions had permitted the establishment of a complete system of international sanitary control confirmed by experience and based on effective rules to which all the countries of the world have adhered. Unfortunately this would be altogether too optimistic a view.

In a recent analysis of the present situation Gaud[1] has brought to light the following interesting but alarming facts. There are some 70 sovereign States in the world on whose co-operation the workings of international sanitary conventions depend. So far as maritime navigation is concerned 9 countries are bound by the Conventions of 1912, 1926, and 1944; 5 by the Conventions of 1926 and 1944; 1 by the Convention of 1944; 14 countries are bound only by the Conventions of 1912 and 1926; 9 only by the Convention of 1926; 10 only by the Convention of 1912; and 16 countries are bound by no convention whatsoever. So far as aerial navigation is concerned 9 countries are bound by the Conventions of 1933 and 1944; 9 by the Convention of 1944; 16 by the Convention of 1933; and 36 by no convention.

Apart from the fact that these sanitary conventions do not approach that principle of universality without which their efficiency is sadly lacking, this curious state of affairs has other effects. Since many countries are bound by no particular convention they are free to take the law into their own hands. Some countries refuse to trouble themselves and take few if any precautions; others, as was seen during the cholera epidemic in Egypt, have rushed to the other extreme and imposed restrictions which go far in excess of what is required. There are in fact not many countries in which national sanitary laws and regulations do not run counter in some way to international conventions and accords. Many aeronautical companies faced with differing regulations in different countries have insisted that their passengers should be inoculated against every conceivable disease. The unfortunate wife of an officer and her three children, for instance, who wished to fly from Paris

[1] *Sem. Hôp. Paris*, 1948, **24**, 201.
[2] Findlay, G. M., *British Medical Journal*, 1946, **2**, 979.

to China were forced to submit to inoculation against smallpox, yellow fever, cholera, plague, typhoid, and paratyphoid. In these circumstances it is hardly surprising that Gaud confirms what was stated in this *Journal* two years ago[2]—namely, that international health certificates are being forged and can be bought on the black market.

It is obvious that one of the major tasks of WHO, and one which is of considerable urgency, is to draw up a new single convention to which all countries will freely subscribe. There are at present 17 separate conventions or accords, without counting the texts of the documents constituting WHO signed in New York in 1946. Such a unitary convention must not be cluttered with the dead wood of previous conventions, the provisions of which were too often drafted not by experts but by persons who, though they may have had medical qualifications, had spent many years in government offices. As a result the conventions may have been impeccable on the diplomatic level but were often sadly ineffective on the practical level. The Assembly of WHO, according to Article 19 of the Charter, has authority to adopt conventions and accords relating to every question within the competence of the organization. A majority of two-thirds of the Assembly is necessary for the adoption of these conventions and accords, which will come into force so far as each member State is concerned as soon as the particular State has accepted it, in conformity with its constitutional rules. A permanent technical organization has thus taken the place of the old cumbersome diplomatic machinery which had to be invoked whenever a new convention had been drafted. It is sincerely to be hoped that there will be not only a change of form but of spirit, and that governments will be less slow and less indifferent to accepting conventions or regulations fully discussed and already adopted by the Assembly of WHO.

The WHO Expert Committee on International Epidemiology and Quarantine is already alive to the present difficulties, and their ultimate aim is to combine the revised international conventions into uniform WHO regulations which after adoption by the World Health Assembly will come into force automatically without the need for further ratification on the part of national legislative bodies. A number of broad principles to serve as a basis for drafting WHO regulations have already been laid down, and these are to be submitted in June, 1949, to the Second World Health Assembly. They are aimed at establishing international standards on such varied matters as the sanitation of airports, disinsectization of aircraft, and quarantine measures applicable to migrants. Beginning in January, 1949, WHO is also going to broadcast daily epidemiological data from Geneva to all parts of the world. This will allow governments to take precautionary measures more rapidly and, it is hoped, more effectively.

MASTER MINDS

Mr. Fred Messer, Labour M.P. for Tottenham, holds the responsible position of chairman of the Central Health Services Council. He is also chairman of the North-West Metropolitan Regional Hospital Board. He has earned these positions of trust on his reputation as a highly able administrator with a special interest in and knowledge of hospital and medical services. But according to a recent report in the *Hendon Times* it would apppear that Mr. Messer allowed himself to adopt a highly partisan attitude to medical men and the work they do. This was at a meeting of the North-West Branch of the Socialist Medical Association under the chairmanship of Dr. S. Leff, medical officer of health for Willesden. Mr. Messer is reported to have said this : " In the days before the new Act, the people were only allowed to be ill at certain times during the day—the times set down on the brass plate in front of the doctor's doors." What kind of confidence can the medical profession have in the chairman of the Central Health Services Council if he makes such ill-judged, inaccurate, and unjust remarks—remarks directed at men and women who after a hard day's work have to be ready to get up at any time of the night in response to a call for help ? " For too long," Mr. Messer goes on, " the needs of the people have been subservient to the needs and training of the doctors." What nonsense this is ! Mr. Messer again goes on : " Now for the first time the health service as a whole will have a master mind behind it." Does he mean the mind of the chairman of the Central Health Services Council, or the uncoordinated mind of an endless series of Ministers of Health ? The medical profession itself has always been in advance of the Government in pressing for improved organization and integration in medical services, and does not underrate the value of the administrator or deny the need for administration so long as it is made subservient to the need of the doctor to give to his patients in the most efficient manner the knowledge and experience wrung from stubborn nature by the master minds of medicine. Our new administrators have yet to learn the lesson of humility, the humility of the man who minds the machine created by men who understand how it works.

BRUISING OF THE HEART

It is now generally recognized that trauma to the praecordium, particularly a severe blow or crushing injury, may occasionally damage the heart even where there is no obvious injury to the chest wall or fracture of the ribs. The symptoms and signs vary considerably, but there may be immediate severe pain lasting minutes or hours, angina pectoris and effort dyspnoea persisting for days or weeks, the development of pericarditis during the following week, and electrocardiographic changes. Most of the latter are evanescent, and unless the patient is examined within a few days of the accident no abnormality may be found. Partial heart block may occur, and this tends to persist for much longer than the other changes. Experimental work and necropsy studies suggest that the usual lesion in the heart is a contusion with varying degrees of oedema and extravasation of blood, or perhaps a tear in the myocardium, though this is less common. Further, for some reason which is not clear, the right auricle appears to be particularly vulnerable. However, the majority of these patients, provided they are not otherwise severely injured, usually recover, and the precise anatomical lesion remains a matter for speculation. Elsewhere in this issue Drs. G. Parsons-Smith and Denis Williams report the case of a boy with a fairly clear-cut picture of a cardiac contusion, with pain, pericarditis, and partial heart block ; the damage was done during a boxing match. Two days after the injury he developed a hemiplegia which appeared to be embolic in origin. This clearly suggests that the cardiac injury had spread through the wall of the heart to the endocardium and resulted in an intramural thrombus, part of which, becoming detached, had given rise to the embolus. If this explanation is correct, it indicates how extensive such an

injury may be. In this case the history indicated that a previous, but less severe, cardiac injury had been caused in a similar manner twelve months before.

INDUSTRIAL WASTES

A plentiful and pure water supply has become part of the environment of most of the inhabitants of this country, and it is apt to be forgotten that such a supply is not a natural phenomenon under most conditions of modern civilization. Our rivers and other sources of water are often grossly polluted by excretal and other wastes and by trade effluents. Those responsible for the purification of water supplies by modern methods must continually exercise great skill and care. In his book[1] on the disposal of industrial waste waters Dr. B. A. Southgate, who is director of water pollution research at the Department of Scientific and Industrial Research, has described the problems involved and the researches which have been and are being made in the attempt to solve those problems.

Most industrial wastes contain in solution or in suspension materials of organic or inorganic nature which are oxidizable and will therefore absorb from the diluting stream the oxygen which is in solution. If effluents which have this action are allowed to enter a stream and to reduce the amount of oxygen in the water below a certain level, fish will die from lack of oxygen and the normal flora will gradually disappear. Solids will be deposited on the bed and banks of the stream, the final result being a complete destruction of its natural characters. Domestic wastes have the same polluting effects, which, however, can be sufficiently reduced in a good sewage works by processes which are mainly biological. Industrial wastes are in general much more polluting than domestic wastes and may have the further disadvantage of containing substances directly toxic to fish or lethal to the bacteria on which successful purification of domestic sewage depends. Some trade effluents may give the stream into which they flow an unpleasant taste or colour, and this stream may later be used as the source of a water supply. Although a certain amount of crude industrial waste can be allowed to enter the diluting streams or the sewage plant, it is usually desirable and often essential that trade wastes should be treated before they are voided from the works.

Industrial effluents differ widely, and each type has to be investigated separately and the manufacturing processes studied at every stage. Dr. Southgate explains the processes used in a large number of industries and the scientific principles involved in the methods which have been adopted to purify the wastes, and he describes the results obtained. There are industries in which the wastes contain much organic matter, as in the textile industries, laundries, leather manufacture, slaughter-houses, dairies and milk products factories, the canning and drying of food, and the manufacture of malt, beer, and alcohol. On the other hand, the carbonization of coal, the pickling of steel and copper, and the use of chromates and cyanides in manufacturing processes produce chemical wastes. The treatment of the effluent in each case by physical, chemical, or biological means presents different problems, and there is the further difficulty of avoiding undue waste of valuable materials. It is sometimes possible to economize in water by the re-use of washing water. From organic waste it may be profitable to recover valuable materials such as fats, or by bacterial digestion to obtain gases of use for power purposes. Even the indigestible residue may be useful as manure. Valuable materials may be recovered from chemical effluents also, as in the extraction of copper by crystallization or deposition on iron.

Much remains to be done not only in applying what is known but also in further research. Our rivers are unable to cope with the pollutions they receive, but there is great hope of improvement now that industry is paying more attention to the treatment of wastes; the operation of the Public Health (Drainage of Trade Premises) Act, 1937, should also have good results. Nevertheless, the problem of maintaining the purity of surface and underground waters in a densely populated and highly industrialized country is Herculean and may perhaps never be completely solved.

[1] *Treatment and Disposal of Industrial Waste Waters*, 1948. London: H.M.S.O. Price 12s. 6d.

TREATMENT OF PERTUSSIS

During 1947 the number of deaths from pertussis in Glasgow exceeded the combined total of deaths from scarlet fever, measles, diphtheria, and cerebrospinal fever.[1] All the common fevers now cause fewer deaths than 20 years ago, but in pertussis the rate of reduction has lagged far behind. As yet chemotherapy has not supplied the remedy: the sulphonamides seem much less effective than, for example, in measles. Swift's[2] preliminary report on the interesting new antibiotic polymyxin is encouraging, but more extended trials are necessary. Workers in the U.S.A. have now had considerable experience with different forms of immune sera, and Felton,[3] who reviewed the subject in 1945, considered that a case had been made out for their use. Both human and rabbit sera have been tried. The former, from hyperimmunized adults, may be used as lyophiled serum or as the concentrated globulin fraction, and the latter is also available as concentrated globulin. Some workers have felt that the serum should be both antibacterial and antitoxic, and Beaudet[4] used such a rabbit serum in a series of 50 children, with successful results. McGuinness and his colleagues[5] gave injections of a lyophiled human serum to 442 patients, of whom 176 were under 6 months of age, and classified 70% of the results as excellent. More recently Kohn and his co-workers[6] have reported on the use of three forms of serum —two human and one rabbit. They regarded the response as satisfactory in 80% of those under 1 year, but the results were less good in patients over that age.

The same criticism can be made about many of these therapeutic trials—namely, that the treatment of a control series has often not been undertaken. The fact that pertussis has diminished in severity during recent years makes it undesirable to compare present results with those obtained in a previous period. There is indeed no sure method of foretelling the outcome in this fickle disease, but to give improved forms of treatment a fair chance earlier diagnosis is essential. It is tragically true that the majority of cases are diagnosed so late in the disease that any form of treatment is likely to be ineffective. In Kohn's series only 2% were admitted before the onset of whooping; a further 77% were seen during the first week of the whoop, when they were already in the late second or third week of illness. Cruickshank[7] drew attention to the value of the post-nasal swab, which he inoculated on Bordet-Gengou medium containing penicillin, but many workers have found that swabbing the post-nasal space through the mouth is almost as cumbersome a method as the cough-plate, which was not designed for the general practitioner.

[1] *Annual Report of the Medical Officer of Health of Glasgow for the Year 1947.*
[2] *Lancet*, 1948, 1, 133.
[3] *J. Amer. med. Ass.*, 1945, 128, 26.
[4] *Un. med. Can.*, 1944, 73, 137.
[5] *J. Pediat.*, 1944, 24, 249.
[6] *Amer. J. Dis. Child.*, 1947, 74, 321.
[7] *Lancet*, 1944, 1, 176.
[8] *Mon. Bull. Min. Hlth.* 1948, 7, 156.
[9] *Proc. Soc. exp. Biol., N.Y.*, 1940, 43, 590.

But more recently Cockburn[8] has shown that when the pharyngeal swab is taken through the nose, as advocated by Bradford and Slavin,[9] not only is the method more simple for the clinician but the results from the bacteriologist's point of view are much more satisfactory. If earlier diagnosis were to be made possible by the use of such a method, patients could be more promptly isolated. Early isolation, quite apart from limiting the spread of the disease, should reduce the risk of secondary bacterial infection and possibly of bronchopneumonia, and treatment with serum or chemotherapeutic substances is more likely to be effective if started before the disease has become well established.

HOUSE WARMING

A long-term experiment in domestic heating which is being carried out at the Building Research Station under the auspices of the Department of Scientific and Industrial Research was described at a recent meeting at the Royal Institute of British Architects. The research is aimed at finding out how houses can be heated with the most economical consumption of fuel and in the most effective manner for all domestic purposes. Eight small semi-detached houses at Abbot's Langley, Hertfordshire, all built to the same design but with different degrees of thermal insulation, have been equipped with identical heating systems in the endeavour to find out how much heat is conserved by improvements in insulation. In a parallel experiment twenty similar houses have been built with identical insulation but equipped with many different heating systems and appliances, including gas and electric convectors, gas and electric-storage heaters, electric tubular heaters, and multipoint gas water-heaters. The apparatus in each of the houses is closely superintended by the research station staff, with the willing, though largely passive, co-operation of the tenants. The experiment started in September, 1947, and is expected to last for some years.

The interim results made known up to the present are so highly detailed and carry so many qualifications that it would be difficult, if not impossible, to draw any broad conclusions applicable to British housing as a whole. The economics of house heating have been taken as the first point of attack. It has been found possible economically to maintain in a house of 900–1,000 sq. ft. (83.5–93 sq. m.) floor space a constant minimum temperature over the whole house of 30° F. (18° C.) above the outside temperature by means of central heating and anthracite-burning boilers, the efficiency of which is highly praised. Systems of whole-house heating are more expensive to install but much more economical in fuel. As for insulation, one contribution which architects can make to fuel economy and domestic comfort is to put the flues well inside the insulated envelope and not throw away the valuable heat which the flues contain, particularly for houses of two or more stories, by enclosing them in outside walls. It was generally agreed by the architects present at the meeting that the need for better heat insulation in house construction must be taken into account in all future building. Here again the additional cost, whatever it may be—and it cannot represent much on the total value of the house—is well worth while not only for the saving of fuel but also for the health of the occupants. The method of ventilation followed in the experiment, using outlets from bedrooms into the roof, was commended in preference to the "by-law" type of grating, which is often stuffed up with brown paper to keep out draughts. One architect pointed out that whole-house heating would enable a more open plan of house construction to be carried out, and many of the small halls and passages and tiny rooms, partly arranged in order to seal off the cold areas of a house, could be eliminated. Whole-house heating systems have been in use for a long time in other countries, and some complaint was made of the lack of enterprise of British manufacturers of heating appliances.

There may well be prejudices, traditional views, and perhaps more practical objections to be overcome before whole-house heating commends itself to householders in Britain. Most of us prefer an obvious source of radiant heat, represented by the open coal fire, though admittedly this is wasteful of fuel and also fails to warm the room equably. Families accustomed to gathering round the hearth will not easily be reconciled to the absence of a fireplace even though every corner of the room is properly warmed. Again, quite a large number of people have a firm belief in the virtues of a cold bedroom. Certainly any revolutionary changes in the warming of houses which might result from the Building Research Station's experiment should be accompanied by a careful check on the health of the people who live in the constant-temperature houses as compared with those who hold to the traditional half-cosy, half-Spartan routine. Centrally heated houses in North America are usually too warm to be comfortable for the British visitor, but the residents there are said to suffer just as much from colds and rheumatic disorders as do people in this country. In America, also, the atmosphere inside houses is often so dry that it has to be humidified for the comfort of the residents. The Building Research Station's experiment, which is said to be the only one of its kind ever undertaken in the world, will be well worth while if it succeeds in solving some of these important problems.

ARSENICAL TOXICITY

Since 1939, when wider use began to be made of rapid methods of treating syphilis with arsenic, the incidence of cerebral reactions in North America appears to have been about 1%.[1] These reactions are given the name of arsenical encephalopathy; in fatal cases brain haemorrhages occur. Sexton and Gowdey[2] became interested in the similarity between the pathology and symptoms of arsenical encephalopathy and those of acute deficiency of vitamin B_1, and in a comparison of the two conditions they observed that a patient receiving a 5-day intravenous drip who developed peripheral neuritis recovered remarkably quickly after receiving massive doses of the vitamin. They attempted to follow the changes in the blood concentration of vitamin B_1 in patients receiving the 5-day treatment with "mapharside" by determining the ratio of lactic acid to pyruvic acid in the blood. In vitamin B_1 deficiency the amount of pyruvic acid rises above the normal. In 9 out of 13 patients treated with mapharside by the 5-day intravenous drip method the level of pyruvic acid rose early and remained above normal until the treatment was finished. The blood sugar rose also, and the hyperglycaemia persisted during the treatment. Clinically there was an increase in sensitiveness of arm and leg muscles to pressure. When these signs and symptoms had developed, the intravenous injection of 600 mg. of vitamin B_1 caused a fall in the sensitiveness of the muscles to pressure. The evidence presented by the authors cannot be considered complete, but their results clearly suggest that not only BAL but also vitamin B_1 is of value in the treatment of the lesions of the nervous system caused by arsenical poisoning.

[1] Thomas, E. W., and Wexler, G., *J. Amer. med. Ass.*, 1944, **126**, 551.
[2] *Arch. Derm. Syph., Chicago*, 1947, **56**, 634.

MEDICAL FOUNDATION OF EPSOM COLLEGE

The Royal Medical Foundation of Epsom College appeals to all members of the medical profession who do not already do so to subscribe to the Foundation, the object of which is to help the families of less fortunate colleagues. The Foundation in 1948 has provided more than £18,000, as follows:

	£
50 ordinary pensions to medical men or their widows ..	1,500
45 Foundation scholarships for boys (educated, clothed, and maintained entirely free of cost)	8,702
13 scholarships for girls	570
Education of 28 boys at reduced fees	1,968
140 pensions and annuities of varying amounts	3,023
Grants towards education of 56 boys and girls	1,843
Grants to medical men, widows, and spinsters	497

In order to maintain this assistance the Foundation has to rely upon the generosity of subscribers and donors for over £14,500 a year. Without sufficient help from them the existing benefactions would have to be curtailed. Owing to lack of funds, many deserving applicants—medical men, widows, and children of school age—remain unassisted. The Sherman Bigg Fund enables the Foundation to make educational grants for those who cannot obtain scholarships. Donations to augment the income of this Fund will be most welcome. Subscriptions and donations for whatever aspect of the work may be sent to the Secretary, Epsom College, Surrey.

CHILD DEVELOPMENT STUDY

It has long been felt by those concerned either with the health or with the education of children that a close study of growth and development, both physical and psychological, conducted on the same group of children in a parallel series of observations would yield valuable results. In 1947 Dr. D. H. Geffen, medical officer of health of St. Pancras, and Professor Alan Moncrieff, of the Institute of Child Health, placed before the Governors of the Foundling Hospital in London a scheme for utilizing their excellent facilities at Coram Gardens—residential nursery, day nursery, and nursery school—for teaching and research purposes. This was sympathetically received, and a further suggestion that a maternity and child-welfare centre might also be started on the same site by the reconstruction of a derelict building was favourably considered by the authorities concerned.

The next development arose when the Central Council for Training in Child Care, which is concerned with the training of boarding-out officers and house mothers under the Children Act, found a shortage of seniors who could take up posts of a supervisory character or as tutors in the various education schemes. The Institute of Education of the University of London and the Institute of Child Health therefore decided to put forward a plan for a joint training and research centre at the Foundling Hospital site. This was discussed with representatives of the Home Office, of the Ministry of Health, and of the L.C.C. Public Health and Education Departments. The two Institutes consulted their own Academic Boards and governing bodies and a final scheme was decided upon, the financing of the teaching side being undertaken by the Institute of Education and that of the research side being shared between this Institute and the Institute of Child Health, with the approval of the appropriate University of London Committees and eventually of the Senate and Court.

A joint committee for the two bodies has been meeting to make detailed plans. On the training side the first course will begin in January. Provision has been made for the appointment of a senior tutor and a junior tutor and for visiting lecturers. Dr. Agatha Bowley has been appointed as senior lecturer in child care and Miss J. E. Cass as tutor in child care. Members of the teaching staff of both Institutes will take part in the course. Miss Cass has also been appointed as honorary educational supervisor to the day nursery on the site so that there may be some general co-operation with the staff in relation to the training of probationers for the National Nursery Certificate. On the research side provision has been made for two educational research assistants, for a part-time medical assistant, and for part-time assistance from the Child Guidance Clinic at the Hospital for Sick Children, Great Ormond Street. Plans for a pilot survey are well advanced. In addition to detailed observations on children in the nurseries and nursery schools it is planned to extend the investigation to babies in the same area who are not attending such institutions. One of the objects of the research programme is to attempt to assess in this way the educational values or disadvantages of the nursery or nursery school. Those concerned with the planning are endeavouring to take a long view, hoping to follow children through the nursery school to the primary school period, and even eventually to adolescence in the youth centre activities in the Harmsworth Memorial Playground, also on the site of the original Foundling Hospital.

Reports of Societies

HEPARIN AND DICOUMAROL

At a meeting of the Medical Society of London on Dec. 13, 1948, with Dr. JENNER HOSKIN presiding, the subject discussed was the therapeutic action of anticoagulants.

Dr. PAUL WOOD described the effects of heparin and dicoumarol in about 100 cases. Heparin was discovered over thirty years ago, but it was twenty years before it was purified for therapeutic use. The dose of heparin was 50 mg. four-hourly for a fairly short time. It could be given by drip, 3 pints (1.7 l.) in 24 hours, each pint (0.57 l.) containing about 100 mg. If that dose were given, they could be sure that the clotting time would not be less than 10 seconds. Dicoumarol was a relatively new drug in this country. The dose given was usually 300 mg. by mouth on the first day, 200 mg. on the second day, and 100 mg. on the third. It had no action for 48 or perhaps 72 hours. Later the doses were determined by the effect on the prothrombin time. The reaction of patients differed considerably from the entirely resistant to the extremely sensitive. Dicoumarol could be dangerous; an overdose resulted in severe haemorrhage, which was very difficult to control. In his own experience and that of his colleagues vitamin K had no effect at all. It was very important to have the prothrombin measured every day or every second day and to keep to round about 30 to 40 mg. per 100 ml. He proceeded to give a few of the results obtained at his hospital during the last two years. Cases of pulmonary embolism numbered 20, 5 of them massive. The average duration of treatment was 26 days, and there were 5 deaths. Cases of cardiac infarct numbered 23, the average duration of treatment was 27 days, and there were 3 deaths; 7 cases of cardiac embolism complicated by pulmonary embolism were treated for 27 days, with 3 deaths. There were 3 cases of arterial occlusion treated for 14 days, with no deaths.

Dr. Wood went on to discuss 10 cases of angina at rest treated on the average for 29 days. No deaths occurred until after the end of treatment; there were two deaths later. The object of the treatment was to prevent coronary thrombosis, and it was extremely difficult to decide whether or not coronary thrombosis would have taken place under a different regime. The decision depended upon the adequacy of the controls, which were not easy to obtain. Contrasted with nine controls treated in a different way, the advantage appeared to lie with the heparin and dicoumarol treatment. The sedimentation rate was very helpful in finding out whether infarction had taken place or not. Dicoumarol in therapeutic doses did not raise the sedimentation rate. One case was that of a doctor who two weeks previously had suffered severe pain in the chest while walking. Later it affected him while he was in bed at night, and shortly afterwards he got the pain on the slightest exertion. The electrocardiograph was normal. He was put on heparin and dicoumarol for seven or eight weeks. This patient was thought to have an active pulmonary embolism, but that was shown not to be the case. He made a good recovery and was now well. In another case substernal pain had persisted for two months, and treatment was followed by complete recovery. The majority of these cases were seen in private practice; they were not commonly seen in hospital until after infarction.

Of the two late deaths in this small group of ten cases of angina at rest, one occurred suddenly about a month after the treatment had stopped, and the other patient died of ventricular fibrillation two or three weeks after the cessation of treatment. The rest recovered without infarction, and he offered the results for what they were worth.

Heparin in Arterial Surgery

MR. DICKSON WRIGHT said that haemorrhage was such a dramatic and dangerous event that methods for its control were always being evolved, but intravascular clotting had not received the same attention, and until recent years it was regarded as an unavoidable disease for which rest and patience were the only treatment. It was now realized that many more patients died of clotting accidents than of haemorrhage. At present there were only the two anticoagulants available, and administration was complicated so that they could only be used in the prevention of impending thrombosis or in the treatment of established thrombosis. Even in this field there was hesitancy about using them, the 20% death rate from embolism being risked rather than the negligible, but dramatic, deaths from overdosage and haemorrhage. It was often feared that heparin would soften the clot and increase the risk of embolism, but this was not the case.

The great value of heparin lay in the treatment of thrombosis of the lower extremities, starting spontaneously or post-partum or post-operatively. It had been proved conclusively that once heparin was administered the clot did not grow 1 cm. further; the clots in the lung and the local recent clot disintegrated, and danger was practically over. The earlier the disease was diagnosed and therapy instituted the less danger did the patient run and the less permanent damage was done to the limbs. Prophylactically heparin could be used in cases in which there had been thrombosis with previous pregnancies or operations. It was given from 48 hours after the delivery or operation until the patient was out of bed. The dosage of heparin must be adequate. It consisted of four daily intravenous doses at 8 a.m., 12 noon, 4 p.m., and 10 p.m. The first and last doses were 12,500 units and the intermediate ones 10,000; each 100 units was 1 mg. of heparin.

Mr. Dickson Wright went on to describe the use of heparin in arterial surgery of the limbs, lower aorta, and iliac arteries. The value of heparin in these cases lay in the prevention of clots which tended to form at the suture lines of anastomosis and embolectomy incisions producing a secondary obstruction from arterial thrombosis. In these cases the clotting time was important and should be left carefully at 30 minutes. Blood transfusions could be given with heparin as an anticoagulant (2,000 units to each litre), and for the recently suggested method of bleeding the patient at the start of the operation and the return of the blood at the end it was the ideal substance. He instanced many other uses of heparin—in venesection in cases of polycythaemia, in inducing skin grafts to adhere with plasma glue, in the prevention of portal and other forms of thrombosis after splenectomy, in the treatment of gangrene, etc.

Dicoumarol had the advantages that it did not require intravenous injection and it was cheaper than heparin. It was a selective liver poison. Its antidote was a blood transfusion and vitamin K. To control its use there must be an estimation of the prothrombin reduction in the blood. The disadvantages of the drug were its two-day delay before it took effect—a gap which could be covered by heparin—and the cumulative action. The Mayo Clinic method of administration of dicoumarol was a single daily dose of 300 mg. on the first day and on every day after this when the prothrombin was greater than 20 mg. per 100 ml. When less than 20 mg. per 100 ml. no dicoumarol was given. If the figure fell below 10 units menadion bisulphite 30 mg. was given intravenously, and when dicoumarol was resumed with the prothrombin content rising above 20 units 100-mg. doses were used. Haemorrhage was countered by a fresh transfusion of citrated blood and 60 mg. of menadion bisulphite.

Mr. Dickson Wright said that when prothrombin estimations were hard to come by he himself recommended 300 mg. on the first day, 200 on the second and third day, 200 on the tenth, eleventh, and twelfth day, 200 on the twentieth day, and 100 on the twenty-first and twenty-second day. He felt that the value of the drug, even without estimations, much more than compensated for the dangers of overdosage. The drug was specially dangerous when used in long-continued small daily doses or in cases wrongly diagnosed as thrombosis.

The main indications for the drug were (1) in treatment of thrombosis in varicose veins, combined with "elastoplast" support; (2) in the prophylactic and curative treatment of deep thrombosis, spontaneous or post-partum or post-operative; (3) in prolonged forms of thrombosis such as thrombophilia, gouty thrombosis, and thrombophlebitis migrans, where the patient remained prone to thrombosis for many months. Thrombophilic sufferers were wise to travel with a stock of heparin and dicoumarol and to know their responses to these drugs.

The President said that he had been particularly interested in Dr. Paul Wood's description of the cases of angina at rest. He had always been afraid for the patient who came up with a very short history of angina (two or three weeks). The likelihood of the development of coronary thrombosis seemed to be much greater in his case. What one would have liked would have been a drug available after coronary thrombosis had occurred, but so far as could be seen—some work had been published in America this year on experiments on dogs after ligating one of the coronary vessels—the results of using dicoumarol had been entirely disappointing.

Notwithstanding a crowded meeting, no one rose to sustain the discussion, and the meeting terminated.

CLINICAL APPROACH TO NEUROLOGY

At a meeting of the Devon and Exeter Medico-Chirurgical Society on Dec. 16, 1948, Dr. F. M. R. WALSHE spoke on the clinical approach to neurology, defining "clinical" as the method of direct study of the patient at the bedside by means of the five senses. The various techniques elaborated within recent years for neurological investigation, said Dr. Walshe, were tending to become substitutes for clinical investigation. He discussed the scope and limitations of lumbar puncture in certain nervous diseases. By the time cases of suspected intracranial tumour reached the specialist nowadays lumbar puncture had generally been done. In such cases this was a useless and irrational procedure not without hazard. Again, purely clinical investigation was usually all that was necessary to diagnose disseminated sclerosis. Nevertheless, lumbar puncture, which might exacerbate symptoms in this malady, was often undertaken as a routine instead of as a last resort for the specific purpose of differential diagnosis in exceptionally difficult cases. Dr. Walshe wondered why lumbar puncture was so often done in cases of multiple neuritis. In acute anterior poliomyelitis it was sometimes justifiable—for example, to confirm the diagnosis or to exclude meningitis in a suspected case in a residential school—provided that the pathologist's report on the fluid withdrawn was speedily forthcoming. It was not justifiable to perform lumbar puncture on a screaming and struggling child in the pre-paralytic stage; indeed, it might tip the scale in favour of paresis and against complete recovery if performed at a time when it was essential to keep the child still.

Turning to epilepsy, Dr. Walshe said that electro-encephalography was rapidly becoming a routine diagnostic procedure, though it was by no means infallible. Clinical judgment was still the most effective weapon for diagnosing this disease. The diagnosis of expanding or space-occupying lesions of the skull could in some cases be achieved only by ventriculography, but many cases could be diagnosed without it. Neurosurgeons were apt to be too "tumour conscious," and it was not always easy to decide when a ventriculogram should be done or whether it should be done at all. Of all cerebral tumours nearly half were gliomata which could not be extirpated without inflicting severe physical and psychic trauma. In slow-growing tumours not causing much disability, and where the patient's life was still worth living, one should hesitate to force the diagnostic issue. All drastic diagnostic procedures threw an additional burden of responsibility on the doctor. If the present trend continued unchecked the art and science of medicine would become submerged and the doctor would be little more than a glorified mechanic. Dr. Walshe concluded: "We must not be seduced from the clinical approach. We must use ancillary methods not routinely but for specific reasons, and we must choose the best time to use them."

PERSIAN GULF MEDICAL SOCIETY

A medical congress was held under the auspices of the Bahrein Island Medical Society on Nov. 4, 1948. All the doctors working in the Persian Gulf area were invited, and 36 were able to attend the meeting. This congress, the first of its kind in this area, was in some ways experimental. It was desired primarily to exchange ideas on the aetiology, diagnosis, and treatment of diseases endemic in this area. Secondly, it was felt desirable to explore the possibility of forming a more closely knit organization. Thirdly, it was believed that a meeting of this kind would do much to stimulate medical thinking in a section of the world where there is little access to large medical centres.

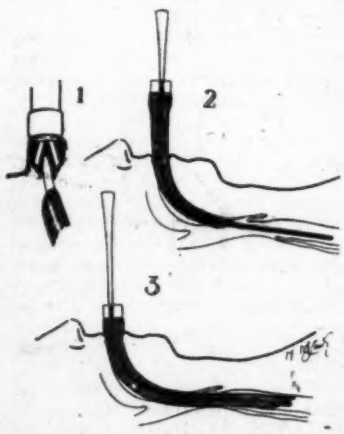
The meeting was opened by the chairman, Dr. Robert J. Biggar, chief surgeon to the Bahrein Petroleum Company, Ltd., and president of the Bahrein Island Medical Society. The chairman then introduced the speakers and conducted the discussions based on the following papers: "Report and personal interpretation of the International Industrial Congress at London," by Dr. A. J. S. Perfect, Bahrein Petroleum Company, Ltd.; "Tuberculosis of the peritoneum treated with streptomycin," by Mr. Allen-Mersh, Kuwait Oil Company; "Diarrhoeas encountered in this area," by Dr. H. H. Golz, Arabian American Oil Company, Dhahran, Saudi Arabia; "External otitis," by Dr. A. Anderson, Anglo-Iranian Oil Company, Abadan, Iran; "Back pain—causes and diagnosis," by Dr. Joseph De Lougherty, Arabian American Oil Company, Dhahran; and "Soft penile ulcer," by Major Wm. C. Marrett, jun., M.C., U.S. Army, Dhahran.

An unusually lively discussion followed each address, and all the European, American, and Indian doctors were generally interested in drawing on the experiences of each other in considering these conditions, which are prevalent around the Persian Gulf. A motion was put forward at the end of the meeting that a Persian Gulf Medical Society should be formed from which committees would be appointed for the study of the problems of the area, certain groups to be assigned one phase of a disease for investigation and final reports to be correlated later. Plans were made for the meetings to be held semi-annually.

Preparations and Appliances

AN AID TO ORAL INTUBATION

Dr. R. R. MACINTOSH, Nuffield Professor of Anaesthetics, Oxford, writes: During the past two years I have been experimenting with large-bore oral endotracheal tubes of different shapes. One of the difficulties in passing tubes beyond a certain size is that the body of the tube obscures the view of the cords through which the tip must be directed. In order to overcome this I thread the tube over a long gum-elastic catheter, the tip of which is then passed through the cords under direct vision (Figs. 1 and 2). Using the catheter as a guide the tube is gently pushed down into position (Fig. 3) and the guide is then withdrawn.



I find this to be useful, too, when for one reason or another—e.g., a patient with prominent front teeth—exposure of the larynx is inadequate to pass a standard Magill tube easily. Here the tube is threaded over a catheter or even a wire with a bulbous end. The guide can be curved to direct it through the partially exposed glottis, after which the outer tube readily follows into position. Needless to say, it is necessary previously to abolish any relevant reflexes.

Correspondence

Marxist Genetics

SIR,—Dr. H. M. Rose's letter (Dec. 11, 1948, p. 1038) is a characteristic effort at defending an untenable position by the introduction of irrelevant questions. Lysenko has not deigned to criticize contemporary biology, nor has the official U.S.S.R. Academy of Sciences, unless the term criticism is now understood in Moscow to mean vilification. His vague remarks about germ plasm and permeable membranes have nothing to do with the point at issue, nor has his statement that Lysenko's innovations have caused the Russian peasants to depart from their traditional conservatism. Lest these remarks of mine may appear to be somewhat harsh, I venture to quote extracts from *Pravda*, from a translation published on Aug. 27, 1948, in *Soviet News* by the Press Department of the Soviet Embassy in London.

"Michurin's materialist trend in biology is the only scientific one because it is based on the principles of dialectical materialism—the revolutionary transformation of the world in the interests of the people. The Weissmann-Morgan idealist trend in biology is pseudo-scientific because it is based ultimately on the admission of divine origin in the development of the world—on the passive adaptation of man to permanent and unchanging laws of nature. . . ."

"The results of the session of the Lenin Academy of Agricultural Sciences have demonstrated the complete victory, in theory and in practice, of Michurin's teaching over the Weissmann-Morgan trend in biology. The victory of the revolutionary Michurin teaching over the reactionary teaching of Weissmann and Morgan is enormously important for the consolidation of the natural-scientific foundations of the Marxist-Leninist outlook, for the ideological upbringing of the progressive Soviet man, and for the practice of Communist construction. . . ."

"The U.S.S.R. Academy of Sciences forgot the instructions given by V. I. Lenin that 'partisanship' is inherent to materialism, and that materialism, whatever phenomena are being considered, must stand openly and directly on the viewpoint of a definite public group. For Soviet scientists this viewpoint is the interests of the working people, and the basis for their world outlook is dialectical materialism. . . ."

"In an address to the great teacher and leader of the Soviet people, J. V. Stalin, the participants of the conference declared: 'We promise you, Comrade Stalin, to take up a leading position in the struggle against idealist reactionary teachings, to clear all roads for the unimpeded development of progressive Soviet science for the sake of the great aims of our people, for the sake of the victory of communism.'"

There can be no compromise when a political attack is made upon scientific truth, and the fact that Soviet biological science, so-called, is now an instrument merely of political propaganda should be borne in mind when the dialectical materialists attempt to discredit truth in the interest of politics.

At the conference held in 1939 under the auspices of the journal *Pod Znamenem Marxisma* (Under the Banner of Marxism) Lysenko said, "When he grasps Bolshevism the reader will not be able to give his sympathy to metaphysics, and Mendelism definitely is pure, undisguised metaphysics." "The teaching of pure lines," says Professor L. N. Delonei, "is not free from metaphysics." And further: "We must proceed from dialectical materialism," says Professor Polyakov. "It is from this position that we must appreciate what genetics has contributed and what Comrade Lysenko has to offer." "Soviet biologists," says M. B. Mitin, the chairman of the conference, ". . . must master dialectical and historical materialism, and learn to apply the dialectic method to their scientific work." And lastly, and most revealing: "In order to get a particular result, one must want to get exactly that result," says Lysenko. "If you want to get a particular result, you will get it." (These words were quoted by U. Y. Kerkiss, and Lysenko interrupted his remarks to confirm their correctness.)—I am, etc.,

London, W.1. GEOFFREY BOURNE.

Delayed Diagnosis of Phthisis

SIR,—I am grateful to your correspondents for raising certain points concerning my article, "The Practitioner's Part in the Anti-tuberculosis Scheme" (Nov. 6, 1948, p. 832). It is apparent from Dr. Bertram Mann's remarks (Nov. 20, p. 917) that I did in fact assume incorrectly that his cases were drawn from sanatorium practice. I am glad to learn, however, that there were even better reasons in 1943 for the longer delay found before patients with symptoms consulted their doctors. Perhaps there has not been such improvement in the patients' response to symptoms over the last few years as I had hoped. This would suggest even more strongly that widespread propaganda is urgently needed to educate the population to appreciate the need for action and the possible significance of symptoms. Such a campaign has already been strongly advocated by both Dr. Mann and myself.

Dr. Ian McD. G. Stewart (Nov. 27, p. 957) quotes active cases discovered by mass radiography who proved to have no symptoms. All tuberculosis workers have of course met such cases, and more especially in mass radiography practice, where the present method of using the machines on presumably healthy groups tends to favour the discovery of a higher proportion of symptomless cases than would be found were the whole population investigated: the patient with prominent symptoms is very likely to be off work and attending his doctor when the unit visits his place of work. On the other hand, active cases with no symptoms are relatively rare in clinic practice, which gives a more representative picture. Nevertheless, as I have pointed out, the symptoms in the first instance may be minor in nature, and this was my very reason for stressing the importance of immediate radiography on the slightest suspicion. What other pointer have we that disease may be present? The fact that most of the out-patients of a famous chest hospital "prove to have nothing more serious than bronchitis" is no excuse for failing to refer such cases for radiography. Overstressing the more unusual symptomless case is more dangerous than attaching undue importance to symptoms, because it may lead practitioners to believe their efforts at diagnosis are not worth while.

Finally, I am surprised to see my suggestion that the anti-tuberculosis services are mediocre offending Dr. Mann. Does he really believe that they can be anything else if such delay in diagnosis occurs? How can we deal effectively with cases diagnosed too late to treat? This factor in itself is enough to degrade any service that is supposed to be both preventive and curative. For 25 years B.C.G. has been extensively used on the Continent, and yet we have not afforded it even an adequate *trial* in this country. Many chest clinics have no *x*-ray units on the premises. It is not by any means the recognized practice to employ fully qualified almoners in the service, even though tuberculosis is *par excellence* an example of a "social" disease. Following frequently belated diagnosis patients must in most instances wait six to nine months for adequate treatment, since domiciliary collapse therapy and management are only practised on a significant scale in very few areas. Our sanatorium waiting list almost doubled in three years, so that in December, 1947, it reached over 8,000, whilst the beds available for tuberculous patients only increased by 10% during the same period. In some areas patients, having completed their medical treatment, find it impossible to obtain any form of adequate rehabilitation or light part-time employment, so that breakdown following return to work is common. England and Wales at present have some 30 mass radiography units operating, capable of *x*-raying only once yearly approximately 5% of the population between 15 and 55. Meanwhile the sputum-positive case is forced to live at home or in a common lodging-house through lack of hostel or "night sanatorium" facilities.

I would therefore restate my opinion that we cannot consider the present attack on tuberculosis in this country anything but mediocre. In large part this is due to a widespread failure to appreciate the extent and urgency of the problem. Few people even in our own profession realize that the tubercle bacillus kills over half of those that die within the age group 15 to 45 years—the group of course containing most of our workers and parents.—I am, etc.,

London, W.12. PETER STRADLING.

Fluorides and Dental Caries

SIR,—Public interest is naturally aroused when the possibility of a simple cure or prevention for dental caries appears to have become a practical possibility. The connexion between high fluoride intake, mottled teeth, and lowering of caries incidence was first shown in this country by Ainsworth.[1] Further research on the biochemical aspects was carried out in this country by Murray,[2] and since that time much work has been done in the U.S.A. and elsewhere. The whole matter has recently received a good deal of publicity in the U.S.A., where large-scale experiments on the artificial fluorination of drinking-water and on topical applications to the teeth are taking place.

Your leading article (Sept. 11, 1948, p. 522) was rightly cautious, though a further letter from Mr. Stocker (Sept. 25, p. 617) was more hypothetically enthusiastic. My attention has recently been drawn to certain proprietary preparations containing fluorides that are, or may become, available, and I feel that it would be as well therefore to review the situation as far as we know it, to evaluate the possible benefits and dangers. It would appear that the consistency of the fluorine–dental caries relationship is marked. On the basis of concomitant variation, the epidemiological evidence relative to domestic water supplies appears to be impressive. Within certain limits the fluoride variability cannot be altered without affecting the prevalence of dental caries. It can, I think, therefore be taken as an established fact that fluorine ingestion during the calcification of the teeth plays an important part in caries prevention. This clearly means that the optimum period for its action is during the period of calcification of the permanent teeth—i.e., from birth until the age of about 10.

The evidence so far forthcoming that fluorides applied topically to the teeth are effective is by no means so well marked as that showing their beneficial action when ingested. Recent work in the U.S.A. suggests that topical application may be effective, but the results obtained have been very variable, and even in the Editorial of the *Journal of the American Dental Association* (1947, **34**, 700), from which Mr. Stocker quotes, it is stated that the "number of applications, the most effective concentration of the solution to be used, and the duration of the protective effect must still be matters of speculation and investigation." Topical application, though recommended as a possibly beneficial measure, cannot therefore as yet be said to be a well-defined or accepted procedure.

The optimum dosage of fluorides when ingested appears to be one part per million, over four parts per million tending to produce mottled enamel with unsightly discoloration. It is clear therefore that internal administration of fluorides should be carefully controlled, and is not devoid of hazards, as apart from the toxic nature of the fluorine itself administration of extra fluorine where a water supply already contains a sufficient quantity may produce severe disfigurement with ineradicable mottling of the teeth. There is at present very little precise and detailed information relative to the action of fluorides, and, while it has been suggested by Volker[3] that the solubility of the enamel is decreased by the fluoride ions replacing certain more soluble ions in the outer layer of the enamel surface, other workers believe that it acts by inhibiting enzymes, which may arrest any local acid production.

In 1947 the American Dental Association vetoed the use of all proprietary preparations for topical application until further evidence was forthcoming. As far as I know this veto has not yet been lifted. To summarize the state of our present knowledge, therefore, it can be said that:

(1) Optimal fluoride ingestion appears to inhibit dental caries when its ingestion takes place during the period of calcification of the teeth.
(2) The evidence that topical application following eruption of the teeth is beneficial, though promising, is as yet by no means conclusive.
(3) The mechanism by which it acts is not yet fully understood, and the optimum strength of solution, frequency of application, and duration, if any, of effect are as yet unknown.
(4) Ingestion of excessive amounts of fluoride leads to very unsightly mottled enamel.
(5) Fluorine is a toxic substance.

With penicillin it was very wisely decided that it should not be released for general use until large-scale controlled clinical experiments had been done to evaluate its worth and limitations. It would be a pity, I feel, if fluorides are to be made available

to the public in this country before adequate trials have been performed. I do not know what proprietary preparations may come on to the market, but in one that I have seen a leaflet is enclosed, from which I quote:

"There is abundant evidence that caries is a 'deficiency disease' due to deficiency, not of vitamins, but of a substance called fluorine, an element which occurs in drinking water, but rarely in sufficient quantity to prevent dental decay.

"The fluorine in drinking water is 'taken up' by the enamel of the teeth, but there is ample proof that the same effect is produced when, instead of being swallowed, fluorine is applied to the teeth in the form of XYZ, and teeth which are regularly and correctly fluorized by using XYZ are highly resistant to caries. This effect quickly becomes evident by the disappearance of 'decay spots,' and of toothache arising from them."

It is admitted that this preparation states on the outside of the box that it is supplied only on a medical or dental prescription. At the same time the statements contained in the leaflet are so clearly unjustified that much harm might ensue. Surely it would be wise to take a leaf from the American book and ban the use of such preparations until further evidence becomes available.—I am, etc.,

London, W.1. ALEXANDER MACGREGOR.

REFERENCES

1 *Brit. Dent. J.*, 1933, **55**, 233.
2 *Biochem. J.*, 1935, **29**, 102.
3 *Proc. Soc. exp. Biol., N.Y.*, 1939, **42**, 725.

Penicillin Dosage Schedules

SIR,—Your editorial (Nov. 27, p. 946) raises a number of important issues, the most important of which receives the least discussion. Before the study of antibacterial drugs *in vitro* can be directly applied in clinical medicine certain preliminary comparisons must be established. With respect to the drug the four relevant factors are: the bacterial growth phase in which the drug is applied, the bacterial sensitivity to the drug at that and any subsequent growth phases, the concentration of the drug, and the time during which the drug is allowed to act. For a direct *in vivo* comparison to be valid it must be shown that these four factors correspond. Besides this, it must be shown that the growth of the bacteria is similar in the two environments and that, in both, drug-resistant variants are equally likely (or unlikely) to be "favoured."

It is correct to state that in a fluid culture receiving penicillin before incubation (i.e., during the stationary phase of the organisms) and then incubated and observed at intervals staphylococci of the "naturally sensitive" variety are more rapidly killed (as detected by lysis) by small than by large lethal doses of the drug. This is shown for instance in the nephelometric studies of Kirby[1] and was directly observed under the incubating microscope by Gardner.[2] The explanation is that these organisms are far more sensitive to penicillin in the phase of logarithmic division than in the "lag" phase, and practically insensitive in the resting phase.[3] It appears that in the presence of high concentrations of the drug the organisms do not so readily pass into the logarithmic phase, and so a longer time elapses before they are killed, over the range of drug concentrations tested. Certainly cell division proceeds more slowly from the beginning in high than in low lethal penicillin concentrations.[4] Similarly, when penicillin is added to a full-grown culture or to cells suspended in saline, lysis is again delayed.[5 6] If, however, penicillin is added to "sensitive" staphylococci already in the logarithmic phase of division, rapid lysis follows,[5] even apparently with more than a thousand times the minimal lytic concentration of the drug (Todd[5]). In Todd's work the difference in the rate of lysis of different "sensitive" staphylococcal strains did not appear to be great.

In applying this work to therapeutics we must confess that we still know very little of the rates of multiplication of staphylococci in the human body, although it may reasonably be supposed that in a rapidly developing infectious lesion the multiplication of the organisms is fairly free, and probably slower when the lesion is well localized. These data are manifestly insufficient for accurate comparison with *in vitro* studies to determine "the theoretical ideal" of penicillin dosage schedules. It may be noted that in the mouth, one of the few sites where penicillin action can be closely studied in man, by far the highest rate of bacterial killing is found in the first fifteen minutes from starting to suck a penicillin pastille,[7] suggesting that the majority of the mouth bacteria are actually in a growth phase highly susceptible to fairly high concentrations of the drug. Tissue-culture studies do not seem to have added much to the solution of this problem.[8]

Surely the fundamental principle is this: that in the present state of knowledge the determination of penicillin dosage schedules is essentially a clinical study. It was in the pages of this *Journal* that Wheatley[9] described six (and probably a seventh) cases of characteristic staphylococcal lesions that responded well to penicillin given in doses up to 200,000 units systemically once or twice daily. One's own experience is similar. It is also well known that localized staphylococcal lesions respond well to relatively enormous concentrations of penicillin established in the pus.[10] If comparison with theoretical work is desired, it may be argued that the studies of Todd amply justify the high-dosage treatment of developing staphylococcal lesions; but such comparisons are essentially misleading, because they ignore the part played by the defences of the host. Here there are two factors to consider—the virulence of the resistant variants and the susceptibility of organisms submitted to bacteriostatic concentrations of penicillin.

On the first point the evidence is quite clear: at any rate the great majority of variants with a marked increase of resistance arising in staphylococcal populations are of low virulence and, *in vivo*, are easily destroyed by the defences of the host.[11 12] Their low virulence has been confirmed in man (but only for a proportion of strains) by Blair, Carr, and Buchman.[13] Such resistant variants are of course "favoured" in artificial culture, and, as they are quite common, the validity of *in vitro–in vivo* comparisons is at once questionable. On the second point there is less evidence, but it is believed that bacteria whose growth is arrested by specific drugs are more susceptible to phagocytosis than while actively growing.

It must also be remembered that a localized staphylococcal lesion is not in free communication with the blood stream (anyone who has "pressed out" a boil will have noticed how much trauma may be inflicted without free haemorrhage occurring). This means that drugs can only reach such a lesion from the blood stream by diffusion through the fibrin barrier deposited under the action of the staphylococcal coagulase. For an adequate concentration to reach the inner part of the lesion a much higher concentration must be present in the blood stream. As these effects remain unmeasured, a high blood concentration is indicated in such conditions. It is known that before the drainage of a "ripe" abscess very little penicillin may diffuse in, but that as soon as the pressure is released the drug is able to penetrate freely.[14] As abscess is the characteristic staphylococcal lesion, this gives good grounds for obtaining as high a blood concentration as possible (even if only for limited periods of time) if the state of tension in a staphylococcal lesion is unknown. It has also been shown that too small concentrations of penicillin seem to stimulate the growth of staphylococci.[15 16]

By all means let us study these newer penicillin preparations, but let their proper usefulness as well as their "dosage schedules" be assessed by clinical trials rather than by laboratory studies which, however valuable in another context, are of uncertain relevance here.—I am, etc.,

Montana, Switzerland. G. I. C. INGRAM.

REFERENCES

1 *J. clin. Invest.*, 1945, **24**, 165.
2 *Lancet*, 1945, **1**, 658.
3 Chain, E., Duthie, E. S., and Callow, D., ibid., 1945, **1**, 652.
4 Eriksen, K. R., *Acta path. microbiol. scand.*, 1946, **23**, 221.
5 Todd, E. W., *Lancet*, 1945, **1**, 74.
6 Knox, R., ibid., 1945, **1**, 559.
7 MacGregor, A. B., and Long, D. A., *Nature, Lond.*, 1945, **155**, 201.
8 Herrell, W. E., and Heilman, D., *Amer. J. med. Sci.*, 1943, **206**, 221.
9 *British Medical Journal*, 1947, **1**, 530.
10 Florey, M. E., and Florey, H. W., *Lancet*, 1943, **1**, 387.
11 North, E. A., and Christie, R., *Med. J. Aust.*, 1946, **1**, 176.
12 Plough, H. H., *Amer. J. clin. Path.*, 1945, **15**, 446.
13 *J. Immunol.*, 1946, **52**, 281.
14 McAdam, L. W. J., Challinor, S. W., Duguid, J. P., and McCall, A., *Lancet*, 1945, **2**, 843.
15 Miller, W. S., Green, C. A., and Kitchen, H., *Nature, Lond.*, 1945, **155**, 210.
16 Eriksen, K. R., *Acta path. microbiol. scand.*, 1946, **23**, 284.

Mallet Finger

SIR,—Perhaps it is not popular to question the economics of some procedures in the practice of medicine to-day, but surely we cannot be such purists as to ignore the financial cost of particular treatments to an individual and the community.

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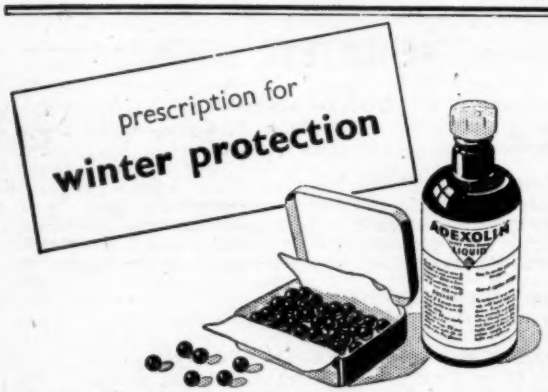

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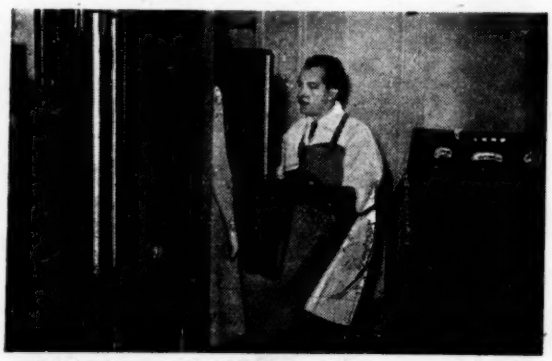

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times immediately and sometimes from days to years after the injury. It is difficult to find a case where extension has returned to the terminal joint. Some of these have had the appropriate plaster-of-Paris fixation, others have had operation, and one an arthrodesis. Others have had no treatment whatever, continuing at work, and the impression has been that the best result is in the latter class. All have had jobs where the residual dropping has not been likely to interfere with their skill to any appreciable extent, and the impression is that those who have carried on work, and where there has been no effort to correct the deformity, have quickly accommodated themselves to it.

Some idea may be reached of the economic factor from these two cases. A man was under treatment for one year for this condition in the little finger and lost some three months from work during this time. A woman injured at work on July 6, 1948, is still away from work—five months of treatment by plaster and operation. Incidentally, although a part-time worker averaging 35s. a week, she receives 45s. a week for an industrial injury, not because she is malingering but, it is suggested, as a result of over-enthusiastic treatment. These cases, by virtue of the form of the plastic fixation, are difficult to accommodate in work while under treatment.

While it is realized that this letter gives impressions and not statistics, it may be that it will stimulate discussion and inquiry into treatment given without thought to financial disability, and possibly without knowledge of the probable ultimate function. It would be desirable to carry out a planned investigation of this problem.—I am, etc.,

Birmingham. W. J. LLOYD.

Pre-suppurative Amoebic Hepatitis

SIR,—Dr. James T. Harold in his letter (Dec. 11, p. 1034) states that no recent record exists of an amoebic liver abscess in a patient who has never left this country. He (and others) may be interested to hear of a case in the Queen Elizabeth Hospital, Birmingham, at the present time. The patient had a large subphrenic abscess which was opened and drained. He gave a history of a fortnight's diarrhoea; proctoscopy led to the discovery of ulcerations of the rectum. A portion of ulcerated epithelium was removed and upon examination proved to contain cysts of *Entamoeba histolytica*. The patient has never been out of the country in his life, and for the last ten years has never even been out of Worcestershire, except to come to this hospital.

I owe my thanks to Mr. A. L. D'Abreu, whose patient he is, for allowing me to write this letter.

—I am, etc.,

Birmingham. FRANCIS LOWE.

Curare in the Treatment of Tetanus

SIR,—In view of the current interest in the treatment of tetanus with curare compounds the following brief case report may be of value.

A patient, a boy of 9, was admitted to hospital after a three days' history of trismus, with painful muscular spasms for twelve hours. On examination he showed marked trismus and a considerable degree of rigidity of the spine, especially marked in the cervical and upper thoracic region. Muscular tone was raised generally, and reflexes were brisk. Examination of the child was sufficient to provoke an attack of muscle spasm with typical "risus sardonicus" and acute pain in the cervical region.

Tetanus antitoxin (24,000 i.u. diluted with 10 ml. of pyrogen-free water) was administered intravenously at once and a further 30,000 i.u. given intramuscularly. The patient had been given 3,000 i.u. before admission to hospital without ill-effect, so chances of anaphylactic shock were considered negligible. At the same time sedative treatment was instituted by giving soluble phenobarbitone, gr. 1½ (0.1 g.) six-hourly, and 0.05 mg. *d*-tubocurarine chloride also six-hourly.

The following day the dose of 30,000 i.u. of antitoxin was repeated intramuscularly. The patient had had no further spasm and was able to swallow semi-solids without difficulty. Treatment with curare and soluble phenobarbitone was continued, and after three days the time interval between doses was lengthened until at the end of seven days the drugs were being given twelve-hourly. Treatment was then discontinued. Apart from a slight restriction of jaw movement the child felt well and was discharged one week later.

This case shows two points of interest. (1) The dose of curare compound used was so small that there was no danger of interfering with respiration, yet it was sufficient to abolish spasm in a fairly advanced case. (2) There was no obvious mode of entry found. The child's arms and legs showed a few healed scratches only, and no other wound was found. From this point of view it is interesting to note that a farm horse at the child's home contracted tetanus a year ago and was cured with tetanus antitoxin, suggesting a heavy implantation of the child's environment with the bacillus.—I am, etc.,

Barrow-in-Furness. ANNE L. BARLOW.

Anaesthesia in Ludwig's Angina

SIR,—The danger of intravenous anaesthesia for incision of acute inflammatory swellings of the neck has long been recognized, yet only recently a case was described to me which very nearly ended tragically.

A resident, called upon to give the anaesthetic to a case of Ludwig's angina, consulted the latest edition of a standard surgical textbook and found that intravenous anaesthesia was recommended as the method of choice. Accordingly he administered "pentothal." Breathing at once became obstructed and extreme cyanosis developed. The surgeon proceeded to perform tracheotomy, but after he had made the skin incision the anaesthetist managed to persuade an endotracheal tube past the obstruction into the trachea. This patient made a complete recovery, though only after twenty-four hours of delirium. Before operation, I am told, there was visible oedema in the floor of the mouth, and in this and in similar cases one might expect some oedema to be present in the pharyngeal wall and in the glottis without necessarily causing any symptoms of respiratory obstruction prior to anaesthesia.

The sequence of events in these cases would appear to start with laryngeal spasm. Pentothal is known to increase the laryngeal reflex, and the presence of oedema in the nearby tissues probably provides the exciting factor. Asphyxia resulting from this spasmodic occlusion of the larynx gives rise to venous engorgement of the head and neck, which increases the oedema and finally results in complete obstruction. Obstruction will still be complete even when the spasm of the larynx passes off, as it invariably does before death. It follows, therefore, that in the absence of tracheotomy or intubation the patient must die.

Anaesthesia for these cases must be non-irritating and not liable to give rise to laryngospasm. Cyclopropane or chloroform given with plenty of oxygen are the agents which best fulfil these requirements. It is scarcely necessary to add that instruments for tracheotomy should be ready in every case of this nature. It seems deplorable and very hard on young residents, not to mention patients, that such misguided advice should be perpetuated in recent editions of reputable surgical works.—I am, etc.,

Sutton, Surrey. JOHN H. WILLIS.

The M'Naghten Rules

SIR,—Dr. Henry Yellowlees (Dec. 11, 1948, p. 1034) has written without fear of offence, and I am sure that he will permit me to do the same. He has produced the usual stock arguments, for which I am most grateful since it allows me to show their flimsiness. It is surprising, for instance, to see the old one, so beloved of the cheap press, regarding "Law from Harley Street." Whether Dr. Yellowlees likes it or not, the law is dependent on medical opinion. First, the accused may be unfit to plead. How is that decided? On a doctor's opinion. Secondly, even if condemned to death, there is a proviso in the Criminal Lunatics Act, 1884 (Section 2, subsection IV), by which two or more legally qualified practitioners can be asked to examine the prisoner and inquire as to his insanity. So the law does come from Harley Street.

I am sorry that Dr. Yellowlees would hesitate to certify a patient who "stated that his father had been insane and that he himself had impulses to murder children." I am certain that no judge in chambers would allow an action for malpraxis against me if I certified a man for such impulses, and no commissioner in lunacy would dare to question such a certificate. The reasons for certification are that the patient is (1) dangerous to himself or others, or (2) in need of care and treatment. Most patients in need of treatment will go voluntarily to hospital, so in general patients are certified because they are dangerous.

This does not mean that they are dangerous all the time, but have brief impulses, potentially homicidal or suicidal, etc. *What is more contradictory than that a patient should be certifiable because he is dangerous and yet we should regard him as responsible if he kills anyone?* How a competent lawyer or psychiatrist can accept such a proposition is beyond my comprehension.

I am sure that Dr. Yellowlees has a wide legal acquaintance, but what a pity he never knew Lord Bramwell, who stated, "Nobody is hardly ever really mad enough to be within the definition of madness laid down by the judges' answers"; or Lord Chief Justice Coleridge, who said, "The judicial decisions on questions of insanity were bound by an old authority which, by the light of modern science, was altogether unsound and wrong." The young barristers I meet express uneasiness and dislike of the rules.

Dr. Yellowlees accuses me of expressing "a travesty of the facts." Well, let them speak for themselves. I cannot burden your columns with long lists of disputed cases, but to examine two recent ones: First, a young man whose father has been psychotic and who himself was always odd enters a hospital ward and removes a child he has never previously seen. He smashes it to death against a wall. Is this insane act regarded as a sign of mental disease and the man sent to Broadmoor? No, the M'Naghten rules are invoked and he is hanged. The other case is of a young man who has been an obvious psychopath since puberty. He has been in Borstal and thrice lost commissions in the Services. He is sexually abnormal—a sadist and handkerchief fetishist. He flogs a woman to death with a riding quirt. Then he cuts a girl to pieces. These senseless crimes are not regarded as signs of insanity, and the man is not sent to a criminal mental hospital. No, the M'Naghten rules are produced and he is hanged. If these men were sane, then my criterion of sanity is all awry.

May I state that I am not trying to interfere with the expert's duty to assist the court, but to persuade politicians to alter the law to something sensible, logical, and in accordance with modern psychiatry, when I suggest that legal and medical insanity should be regarded as identical? May I offer the hope that both Dr. Yellowlees and I shall live to see this accomplished?—I am, etc.,

London, W.1. CLIFFORD ALLEN.

Femoral Hernia

SIR,—I should like to express my agreement with Mr. Andrew G. Butters (Oct. 23, 1948, p. 743) in his advocacy of the low operation for femoral hernia, though one should always be prepared to use the high (Annandale) approach in the exceptional case. Thorough freeing of the neck of the sac, as he stresses, is very important to secure adequate reduction.

I think the best technique to use is that described long ago by Macewen,[1] who used a puckering stitch to transform the sac into a pad to block the upper end of the canal. Instead of the single strand he used I prefer to run a catgut suture up one side of the sac across the neck and down the other side. When this has been done the sac with its adherent fat is reduced into the abdomen, and with one finger blocking the femoral canal each end of the suture is pulled tight so that the sac is formed into a pad, and the ends of the stitch tied. A pull on the catgut will tell in the majority of cases that the canal is safely closed, in which case, when a local anaesthetic has been used, the patient may safely walk out of the theatre.

I am less inclined to agree with Mr. Butters's view that because a femoral hernia usually makes its appearance at the age of 50 years or later the majority of femoral sacs are acquired.

Some years ago I had charge of a woman of about 50 years of age who was admitted with a mass in the right iliac fossa and a recently acquired, rather tense right femoral hernia. The former was regarded as an appendix abscess and expectant treatment decided on. After about a week she became anxious to go home, but it was considered that the femoral hernia at least was a danger, and it was explored. At operation a thin sac was found to be filled with blood-stained fluid. The neck of the sac was so narrow that some persuasion was required to introduce a probe-ended dissector into the abdomen, and when this was done blood-stained fluid trickled from the abdomen. Laparotomy then revealed similar fluid in the abdomen and a fixed growth apparently arising from the right ovary. Such a sac could hardly have been acquired, and it is easy to imagine a congenital sac with a narrow neck remaining dormant till, with advancing years, loss of supporting fat in the femoral region allows a tongue of omentum to slip down and produce a hernia.

Incidentally, it may be mentioned here that a useful retractor for the suture or transfixion of the neck of funicular sacs may be devised from the common or kitchen four-pronged fork, the ends of the two medial prongs being bent away from the midline of the instrument to prevent their being entangled in the tissues. The instrument is slipped over the sac, and the assistant uses one hand to press it firmly against the abdomen while his other hand pulls the sac firmly forward. The abdominal contents are kept from entering the sac and the surrounding tissues clear of the surgeon's needle.—I am, etc.,

Birmingham J. W. RIDDOCH.

REFERENCE

1 *British Medical Journal*, 1887, **2**, 1263.

Nephritis in Textile Workers

SIR,—Dr. G. Herdan (Dec. 18, 1948, p. 1083) makes some statistical criticisms of my article on this subject (Nov. 15, 1947, p. 771), but I cannot agree with his conclusions. In the first place he suggests that my series of personal cases is not a representative sample of the population because it does not show deaths from nephritis or from malignant hypertension in the older age groups. Evidently Dr. Herdan is not very familiar with renal disease or he would know that both conditions are extremely rare over the age of 50. I do not remember ever seeing a case of malignant essential hypertension over the age of 60. Benign essential hypertension does not occur in my table because it does not cause death from renal disease. It is largely for these reasons that I am so certain that the Registrar-General's deaths from so-called nephritis are mostly not renal deaths at all.

I cannot agree either with Dr. Herdan's second point that deaths from nephritis in textile workers should be compared with deaths in the whole population rather than with deaths in social classes III and IV, from which textile workers are drawn. Surely if there were any increased incidence of nephritis due to occupation rather than social circumstances my comparison is the only one by which this could be shown?

Finally, I do not wish my statistical analysis to be taken as proving anything, as I clearly said in my conclusions. The whole paper was merely written to expose what is still the greatest fallacy of all statistical argument—namely, the facile assumption that the data from which the statistics have been compiled are sound.

The question of renal disease in textile workers is now being investigated in the field by Professor Lane's department, and I have no doubt we shall have the answer shortly.—I am, etc.,

Manchester. ROBERT PLATT.

Treatment of Simple Ganglion

SIR,—The present teaching on the subject of simple ganglia is inadequate, for in many cases a wrong diagnosis is made—e.g., fibroma, neuroma, osteoma, chondroma, bursa, and even sarcoma. In a few cases seen diagnostic *x* rays have been taken and, in some, unfavourable prognoses had been given. The condition is common in factory workers, steel workers, miners, etc., and there can be little doubt that heavy work and strain are aetiological factors.

The treatments usually advised in surgical textbooks are: (1) Do nothing in the hope of spontaneous disappearance. This is unsatisfactory, for if a patient comes to a doctor with a swelling he expects something to be done about it. (2) Hitting the swelling with a hard object such as a book. This is clumsy and possibly dangerous. In many cases—e.g., in the palm of the hand—it is often impracticable. This treatment should cease to find a place in modern textbooks. (3) Aspiration and injection of a sclerosing fluid. This is painful, disabling, and often unsuccessful. It is not to be advised. (4) Incision with a tenotome and expression of the contents. (5) Excision of the swelling. This is a major surgical procedure, necessitating a general anaesthetic, most careful asepsis, and subsequent rest. It

leaves a permanent and often unsightly scar, and is often followed by recurrence.

Most surgical textbooks advise excision of the swelling as the best treatment. No mention is made of what is by far the simplest, easiest, and most satisfactory treatment. In the great majority of cases ganglia can be cured by the application of firm, steady pressure with the palmar aspect of the end of the thumb to the swelling—the thumb being supported by the fully flexed fingers. The part should be resting on a hard, firm base, such as a table or desk. Tremendous pressure can be exerted, but it is accurately controlled, and, as the swelling goes, it is quickly and automatically relaxed. In superficial swellings in thin patients the jelly can be seen to disperse in the tendon sheath. The ganglion is a collection of jelly in a diverticulum of the sheath.

Some discomfort, hardly amounting to pain, is felt by the patient, but he may be reassured that the surgeon will possibly feel as much discomfort. It is important that the surgeon should not strain or damage his own metacarpo-phalangeal joint, for considerable pressure has sometimes to be applied. If the patient is unwilling to accept the discomfort involved, or if very considerable pressure is necessary (and this is not usual), local infiltration with procaine may be used. In a very nervous subject a little gas may be administered or intravenous "pentothal," though this should rarely be necessary. Most cases are very easy to do, but a few are difficult, and it is not always possible to foretell which will be the easy ones. Generally the ganglia with a bony background are easy, and those with a soft-tissue background are not so easy.

In the great majority of cases this treatment is successful, but in a few—those in which the opening into the tendon sheath is small or the jelly very solid—the swelling cannot be dispersed. In such cases puncture of the swelling with a fine tenotome after infiltration with procaine and subsequent pressure is the treatment to be adopted, and is effective. The results of treatment are very good indeed: most cases can be dispersed, and few recur. If there is a recurrence, the treatment is repeated. Excision is not the best treatment and should seldom, if ever, be necessary.—I am, etc.,

Rotherham. ERIC COLDREY.

Temperature Recording

SIR,—It is interesting to see confirmed by Professor Alan Moncrieff and Dr. B. J. Hussey (Dec. 4, 1948, p. 972) what one was taught as a student about temperatures. I should like to add a general practitioner's comments. The article does not emphasize the need to test thermometers. I once found a variation of 2° F. (1.2° C.) in a dozen thermometers certified as accurate. Position does not seem to me important, except to avoid the cavernous, sweat-soaked axillae of neurotics, also the rectum. Perhaps I am exposing some psychological kink when I say that I feel interference with the rectum should be limited to those digital examinations which can only be made P.R.

My practice is to use any one of three positions—the groin in children, the mouth in older children and adults, and the axilla only when there is an obvious throat or mouth condition involving gross risk of cross-infection. I make a correction for groin or axillary temperatures and record all readings as though they were buccal.

The time factor is rightly emphasized. I think I take not less than thirty temperatures a day, and allow at least two minutes for each—more, if there is doubt. This involves an hour a day: but it is not difficult to use this time pulse-recording, examining ears, soothing relatives, etc. It is worse than useless—and, I am afraid, a common fault in hospital and general practice—to make hasty and inaccurate temperature records.

Finally, one should not forget that the "normal" temperature is merely an average. On a hot summer evening in London the temperatures of twenty patients with "afebrile" disorders were between 98.6° F. (37° C.) and 99.2° F. (37.3° C.); whereas off the coast of Newfoundland on a winter morning I recorded a succession of temperatures below 96° F. (35.6° C.). Apart from climate, many patients vary from the normal. For this reason I take the first opportunity to record the normal temperature and pulse of a patient—e.g., when he brings his panel card. In this way one knows that even a pulse rate of 60 may be tachycardiac and a temperature of 98.6° F. subnormal. I have a great respect for a thermometer—if it is a good one used intelligently.—I am, etc.,

Wembley, Middlesex. M. C. ANDREWS.

End of Compulsory Vaccination

SIR,—To many of us Dr. C. Killick Millard will always be associated with vaccinia, and it was a pleasure to hear his voice again (Dec. 18, 1948, p. 1073) in vindication of his well-known views on the subject. While I have subscribed to some of his arguments in the past I do not share his complacency about the future. Compulsory vaccination of infants, despite the exemption clause, was a procedure that few medical men could push with a clear conscience. I have always felt that the advantages, disadvantages, and possibilities should be clearly explained to the parent, and that no doctor should take the responsibility of advising yea or nay.

Mass vaccination of a community threatened with smallpox is seldom, if ever, justified. At the same time vaccination is the specific measure against smallpox and should be employed promptly and accurately where indicated. The medical officer of health who panics and advises mass vaccination is like the sportsman who "browns" the covey instead of picking his birds in front, and the results are comparable. If—to follow up the simile—he fails to pick up the wounded birds (those inoculated but not yet showing a "take") or permits them to escape into the next parish, the results may be disastrous. I have not been impressed by the claims of those who have attempted to justify mass vaccination, not only for the reasons which Dr. Millard gives regarding self-limitation of smallpox, but also because of the fact that in most instances the measure was adopted too late to be of any effect. It is just possible that compulsory vaccination reduces the effect of the first impetus of an epidemic and thus gives us time to mobilize our forces, but it may be argued that it may mask the initial infection.

Medical officers are now expected to "push" vaccination as they do immunization against diphtheria. The only reason which I, personally, can advance for the vaccination of an infant is that in later life, should he be compelled to be vaccinated, he will have less risk of contracting encephalitis. Similarly, I would feel bound to point out the danger of primary vaccination to an adult in need of protection. The obvious policy is to produce a vaccine which will not carry a risk of causing post-vaccinal encephalitis and which we can advocate with confidence.—I am, etc.,

Kirkcaldy, Fife. JAMES R. W. HAY.

POINTS FROM LETTERS

Proof-readers' Disease

Dr. J. S. MEIGHAN (Bridge-of-Weir, Renfrewshire) writes: I claim to have discovered a new disease—proof-readers' carelessness. Almost all books now published in this country have many more printer's errors than before the war. . . . The disease is not confined to books but also affects newspapers. . . . How is it that almost any American book one picks up, or book printed in our Dominions, has much fewer misprints?

O Russia! O Mores!

Dr. ASHLEY A. ROBIN (Burley-in-Wharfedale, Yorks) writes: I regret having to take you up so soon after criticizing your reviewer Dr. Darlington, but after reading the annotation "O Russia! O Mores!" (Dec. 4, 1948, p. 991) I wonder whether the real issue is one of an individual bad reviewer or whether it is a fact that this review was in keeping with your recent treatment of Soviet science in general. On Aug. 30, 1947, in a leading article entitled "Ourselves and the Russians," you dealt with an article entitled "The Sham Political Neutrality of the *British Medical Journal*" which had appeared in *Meditsinsky Rabotnik*. The *British Medical Journal* was accused of "a tendency to preserve silence on and to ignore the achievements of Soviet medical science . . . and to publish mendacious information." This was hotly denied, and a "sincere desire to inform British readers of the advances and the contributions of Russian medicine" was expressed. Since then there have been four contributions dealing with Soviet affairs. These articles were uniformly hostile. The last article by a Soviet contributor was on Dec. 8, 1945. In it V. Parin, reporting the Soviet Academy of Medical Sciences, says: "All the speakers mentioned the achievements of medical science in Europe and the U.S.A. . . . and expressed great interest in foreign equipment and in the foreign scientific press." I trust that patience is a Russian virtue. . . .

Obituary

LIONEL COLLEDGE, F.R.C.S.

We announce with regret the death, on Dec. 19 at the age of 65, of Mr. Lionel Colledge, one of the most distinguished figures in otology and laryngology in this country. Mr. Colledge, who died at his home in Upper Wimpole Street, was for many years a valued contributor to the *British Medical Journal*.

The son of Major John Colledge, of Cheltenham, he was educated at Cheltenham College and Caius College, Cambridge. Lionel Colledge qualified M.R.C.S., L.R.C.P. in 1908 as a student at St. George's Hospital, graduated M.B., B.Ch. in 1910, and took the F.R.C.S. a year later. During the 1914–18 war he served with the R.A.M.C. in France, and after a short period in command of a casualty clearing station he became aural surgeon to the First Army. He was on the staff of the Hospital for Diseases of the Throat in Golden Square, and he was consulting surgeon to the Ear and Throat Department at St. George's Hospital. Later he was also surgeon to the Royal Masonic Hospital and the West End Hospital for Nervous Diseases. The rules of St. George's Hospital made it necessary for him to retire at the height of his professional activity, but his election to the staff of the Prince of Wales General Hospital at Tottenham allowed him to continue his hospital work there. In later years Mr. Colledge acted as consultant to the Cancer Hospital, where he was able to continue the work on malignant disease of the larynx and pharynx which he had begun early in his career in association with St. Clair Thomson. Together they published in 1930 a monograph on cancer of the larynx which was one of a series in the Anglo-French Library of Medical and Biological Science. This work included the material which had already been presented by Colledge as Semon Lecturer in Laryngology at the University of London in 1927.

In the recent war Mr. Colledge came to the assistance of St. Mary's Hospital and at the same time acted as consulting otologist to the Navy. He wrote authoritatively on a variety of subjects and had a wide knowledge of the literature of his specialty. He contributed articles to the *British Encyclopaedia of Medical Practice* and to Maingot's *Postgraduate Surgery*. His *Guide to Diseases of the Nose and Throat* was written in collaboration with C. A. Parker, and his work on the surgical treatment of paralysis of the vocal cords, on which he assisted Sir Charles Ballance, is well known.

He acted as editor of the Section of Laryngology in the *Proceedings of the Royal Society of Medicine*, and there his revisions, although drastic at times, were of benefit both to author and readers. He was one of the founders of the British Association of Otolaryngologists, and its first vice-president, and he held the presidency of the Sections of Laryngology and Otology of the Royal Society of Medicine.

He married Margaret, the daughter of the late Admiral J. W. Brackenbury, and they had two children. Their son, Maule, lost his life while serving with the Royal Air Force in Europe. Their daughter, Cecilia Colledge, is world-famous as a skater.

Mr. V. E. Negus writes: To some it appeared that Colledge was interested in the major surgical aspects of his specialty to the exclusion of the minor or less serious diseases; this supposition was, however, somewhat exaggerated. Although known more particularly for his interest in malignant disease, yet those who followed his work admired his ability in diseases of the ear and in many other directions. In research, too, Colledge had a share, working with Sir Charles Ballance on the problems of nerve anastomosis. They performed many experiments on monkeys and apes, especially with regard to paralysis of the larynx; anastomosis of the phrenic to the injured recurrent laryngeal nerve promised success, but mistiming in the larynx of the human subject gave disappointing results.

Those who knew Colledge only at a distance may have thought him forbidding at times, but those who held his friendship knew that close below the surface lay a benign and generous character, allowing him to entertain his friends graciously and to see the lighter side, with keen appreciation of any humorous aspect. As house-surgeon to him for a time at Golden Square, I found sympathy and tolerance, with ready support and help in difficulties. On foreign travel there was no better company. Some trivial annoyances, such as the rattling of cutlery on a table in the dining car, irritated him, but these minor traits accentuated the bigger and better aspects of his character. He was fond of visits to foreign clinics, and as a member of the visiting Association of Throat and Ear Surgeons of Great Britain, and of the Collegium Oto-Rhino-Laryngologicum, he made many trips, on some of which his wife accompanied him and acted as a skilled interpreter in a number of languages. His occasional relaxation was shooting on a Saturday, but non-medical holidays were rare. Work was his constant occupation, and much reading gave him a critical judgment of great value. In discussions he was stubborn and somewhat dogmatic, but his judgments were based on a wide experience and were adopted only after close inquiry into the methods of others.

It was distressing to find that physical disabilities after his critical illness partially cut him off from the active life he had led; heroic and courageous determination, supported by the devotion of his lady attendant, kept him in touch with some of his interests. To the end of his days he visited the Royal Society of Medicine and the Medical Society of London, with both of which he had been intimately connected and for which he had done so much. Widely known to many more than those of his own special branch of medicine, Colledge was esteemed highly, and most of all by those who knew him best. He laboured unceasingly for the specialty of his choice, and the result of his labours is a lasting memorial to him: the large number of those who attended his hospital practice and studied his writings will for long bear witness to his influence.

W. M. M. writes: Laryngology has sustained a very great loss in the death of Lionel Colledge; he made laryngectomy appear very easy, and his results were wonderful. His hobby was work: he seldom left London. Any evening he was to be seen walking to or from his house with stick or umbrella over his arm, his hat seldom on his head but carried. He was a man who wanted knowing, but, once known, he was always a real friend. Though reserved, Lionel held firmly to his own views, due doubtless to his extensive and encyclopaedic knowledge of the literature of his specialty.

LUCIEN VAN HOOF, M.D.

Few who are interested in tropical medicine can fail to have heard of Major-General Lucien-Marie-Joseph-Jean van Hoof, who died in Antwerp on Dec. 6. Van Hoof was born in 1890 at Malines. He served as a volunteer throughout the war of 1914–18, being decorated with the Belgian croix de guerre. Later he joined the medical service of the Belgian Congo, becoming its médecin en chef in 1934. He retired to Belgium in 1946 and was appointed a professor at the Institut de Médicine tropicale Prince Léopold in Antwerp. The high efficiency of the medical services in the Belgian Congo and the ever-rising standard of health of its inhabitants are very largely due to van Hoof's great powers of organization. The research institute which he was responsible for creating in Leopoldville is without a rival in tropical Africa, while the housing of Africans in cities such as Leopoldville, Stanleyville, and Elizabethville, a question in which he was deeply interested, provides an object lesson which many British colonies might well study with advantage. Although in his last years in Africa he was naturally encumbered with many administrative duties, he remained throughout an active research worker. He was particularly interested in trypanosomiasis, and in the past few years he had carried out important original investigations on the prophylaxis of sleeping sickness with pentamidine. These investigations are likely to play an important part in the control of human trypanosomiasis throughout Africa. During the war years van Hoof did much to facilitate close co-operation between the British and Belgian authorities. He was a well-known figure at many inter-Allied conferences on yellow fever and trypanosomiasis, and his knowledge and advice were always of the utmost value. The Congo troops who served both in East and West Africa owed much of their high standard of fitness to van Hoof's thorough knowledge of how to preserve the health of the African under the most trying tropical conditions. Those who are fortunate enough to have visited Leopoldville

will long remember van Hoof's kindness and unbounded hospitality. He had many British friends, who will wish to join with their Belgian colleagues in mourning the loss of a great man whose work has done much to improve the health of tropical Africa.—G. M. F.

Dr. NANCY GWENDOLYN SHUBIK died suddenly on Sept. 20. She was the daughter of Mr. and Mrs. F. S. Rogers, of Newport, Monmouthshire. She entered the Welsh National School of Medicine in 1935, and qualified M.R.C.S., L.R.C.P. in 1939, taking the D.P.H. in 1941. After two years in clinical and public health work she was appointed demonstrator in pathology at Cardiff. In 1944 she became junior lecturer in pathology at the British Postgraduate Medical School, where she remained until 1945, when she joined the Indian Medical Service. She did excellent work in India, and on returning to England in 1947 she again took up laboratory work and was engaged in neuropathology in Sir Hugh Cairns's department at Oxford. Dr. Shubik was an enthusiastic worker, always determined to seek the exact answers to the problems that she met in her work. She published, in collaboration with Professor E. J. King, several papers on silicosis. She was a member of the Pathological Society of Great Britain, and many of her fellow members will sadly miss her presence at the Society's meetings.

Dr. FREDERICK HENRY WADDY, who died on Nov. 17 at the age of 79, was the third son of the Rev. J. T. Waddy and a nephew of the better-known Judge Waddy, Q.C. Following a brilliant scholastic career at The Grove, Kingswood, and Wesley College, Sheffield, he studied medicine at Glasgow University, graduating M.B., C.M. in 1893 and proceeding M.D. in 1896. After several house appointments he was for three years senior resident medical officer at Firvale Hospital, Sheffield, in which city he started in general practice in 1900. During these early days he obtained the D.P.H. but nevertheless elected to remain in practice, retaining his association with the Guardians as a parish doctor and public vaccinator. As a practitioner he followed his profession for nearly thirty years with a degree of integrity and philanthropy that led to his being profoundly respected. A man of modest and retiring personality, he was widely accomplished in other arts and sciences than that of medicine, being highly proficient in mathematics, astronomy, meteorology, and botany. He was revered as a Wesleyan preacher and known as a scholar in theology, Greek, and Latin. Such was the man who became a casualty at the age of 55. Labouring under the progressive disability resulting from encephalitis lethargica, he was obliged to retire from active professional work three years later, in 1927. With deep distress his relatives and professional colleagues witnessed the decay of his mental capacity for a further twenty-one years, until he died peacefully while asleep at the Northampton home of his daughter, Dr. Ethel Waddy. He leaves also a widow and two sons, the younger of whom is a member of the profession.—D. C. W.

Dr. HARRY TRIST ROBERTS died at his home in Pangbourne on Nov. 20 at the age of 77. He was educated at University College and qualified L.D.S. at the Royal Dental Hospital, afterwards going to St. Mary's Hospital, where his father, Dr. Owen Roberts, and his two brothers had qualified previously, to obtain his medical diplomas. He practised for many years in Harley Street and at his house in Kensington. He was a hard worker, and his genial and sympathetic nature won him hosts of friends and he was greatly esteemed by his patients. He was a keen sportsman, and played cricket for the M.C.C. and rugby for the Wasps and Kensington. Dr. Roberts was a Freeman of the City of London and a Girdler. He took a great interest in the activities of the B.M.A. until he developed osteoarthritis and became hopelessly crippled and was compelled to give up his practice in 1942. He leaves a widow, to whom will be extended the sympathy of his friends and colleagues.

Dr. TOM ENTWISTLE FERGUSON, of Bishop Auckland, died on Nov. 28 at the age of 63. Born at Bolton, of Scottish ancestry and of an old medical family, he qualified at Glasgow in 1911. After a period as house-surgeon at Stanley Hospital, Liverpool, and a tour as a ship surgeon, Dr. Ferguson entered general practice in Bishop Auckland in 1913. He joined the R.A.M.C. in 1915 and served in France and Italy, resuming practice in 1919. He joined the B.M.A. in 1912, and his colleagues honoured him with the chairmanship of the Bishop Auckland Division in 1931–2. Not only in his term of office but at all times Dr. Ferguson gave ungrudging and loyal service to the Association. He took a lively interest in the Bishop Auckland Cottage Hospital, of which he was honorary physician and surgeon. Many patients, especially in the days when distance and transport were more important factors than they are now, have been grateful for his skill as a surgeon. From 1939–45 Dr. Ferguson was engaged in the work of civil defence—training ambulance students and taking charge of a mobile unit. Golf was his recreation, but had to be forsworn after the first attack of his terminal illness. Dr. Ferguson retired from practice on May 1, 1948, and was succeeded by his son, Dr. A. J. A. Ferguson. Tom Ferguson's death has deprived many of his colleagues of a personal and valued friend and his patients of a devoted physician. He was honest as the day; a philosopher and wit; an admirable host and a good companion. —P. V. A.

Dr. WILLIAM JOHN FRAIN died at his home in Batley on Dec. 6 at the early age of 46, just two years after suffering an acute heart attack which severely limited his later activities. Dr. Frain came of a well-known Dundee family, and he graduated M.B., Ch.B. in 1931. He had worked in the public health service in Suffolk before coming to Yorkshire some ten years ago, and as medical officer of health of Pudsey, and later of Batley, he was an active member of the Yorkshire Branch of the Society of Medical Officers of Health and of the British Medical Association. He neither sought nor secured the limelight, but unostentatiously did much very useful work on behalf of the people of his town. Dr. Frain foresaw clearly the changing status of county district medical officers of health, a change which he considered was detrimental to the service as a whole. A bachelor, he nevertheless enjoyed a most comfortable home life with his sister. He was interested in children and young people, and they liked him. He was a keen churchman, and the large gathering at the memorial service, including the mayor and corporation of Batley and many doctors, was a genuine tribute from those who knew him best.—E. D. I.

Dr. WILLIAM JAMES BENNETT-JONES died at his home in Liverpool on Dec. 14 at the age of 75. A student of Edinburgh University, Dr. Bennett-Jones qualified in 1898, graduated M.B., Ch.B. a year later, and proceeded M.D. in 1903. Dr. Bennett-Jones was well known in Liverpool as an anaesthetist. He was a founder member of the Liverpool Society of Anaesthetists in 1930 and became its president in 1946. He was consulting anaesthetist to the Royal Liverpool United Hospital, and for many years senior honorary anaesthetist to the Royal Infirmary. Dr. Bennett-Jones was a fellow of the Association of Anaesthetists of Britain and Ireland and of the recently formed Faculty of Anaesthetists of the Royal College of Surgeons.

Mr. Robert Kennon writes: "B. J.," as he was affectionately called by his wide circle of friends, was a man of outstanding character, with deep religious feelings, and an exponent of family life and the full meaning of the home. Although a city dweller, he never lost his passionate love of Wales—its preachers and its poets, its language and its customs. A most charitable man, he gave his all in the service of his patients. No one was more accessible or more willing to respond to emergency calls at night, in spite of his advancing years. As an anaesthetist his services were appreciated by Mr. Thelwall Thomas, Sir Robert Jones, Sir Robert Kelly, and Mr. Thomas Guthrie—with whom he was associated in cottage and mansion, and in hospitals great and small. Others quickly recognized his reliability, his helpfulness and co-operation in difficult circumstances, and his continuing care for his patients during the period of recovery. He was a master in the art of administering open ether, in rendering it pleasant for the patients, in maintaining a clear air-way, and in using as little as possible of any drug consistent with a smooth operation. Indeed, it has often been said that more mesmerism than anaesthesia was given, and certainly the calm which fell upon his excitable countrymen as they counted slowly in Welsh was a revelation in the correct approach to anaesthesia. For thirty-six years he used endotracheal methods where necessary. Ever willing to learn, he continued to modernize his technique when, and only when, the new drug was beyond its experimental stages. He leaves a widow, two sons, and four daughters, to whom our deepest sympathy is extended.

Dr. EVAN WILLIAM MONGER HUBERT PHILLIPS died at his home in Port Talbot on Dec. 14 at the age of 64. Born at Newport, Pembrokeshire, Dr. Phillips was educated at Llandovery College, Oxford University, and St. George's Hospital. He graduated B.M., B.Ch. in 1909, proceeding D.M. in 1921. He went on to take the F.R.C.S.Ed. and the M.Ch. in 1929, when he was an assistant in Port Talbot to the late Dr. J. H. Davies, whose partner he became. He had worked in this area for some forty years and had been prominently associated with Port Talbot General Hospital. Dr. Phillips was a magistrate and served on the county bench for many years, and he was also president of the local camera club.

Medico-Legal

LIBEL ACTIONS BY B.M.A.

SETTLEMENT ANNOUNCED

In the King's Bench Division on Dec. 21 before Mr. Justice Hilbery the settlement was announced of two libel actions. The first was brought by the British Medical Association against Daily Mirror Newspapers, Limited, and the second by the British Medical Association against Dr. Santo Wayburn Jeger, Mr. Somerville Hastings, Dr. Louis Comyns, and Dr. Hyacinth Bernard Wenceslaus Morgan, who are all members of Parliament.[1]

Mr. C. R. Havers, K.C., who appeared with Mr. H. C. Dickens for the Association, in announcing the settlement of the first action, said that in the issues of the *Daily Mirror* of Jan. 30 and Jan. 31, 1948, under the headings "Bevan challenges doctors on open ballot," and "Doctor M.P.s accuse B.M.A. leaders," the defendants referred to the ballot which was then about to take place. The British Medical Association took the view that passages in those two issues were so worded that it would be generally understood that the defendants were accusing the B.M.A. and its officials of so dishonestly conducting the plebiscite that, in spite of the pledge to the contrary given by the B.M.A., the individual voting of practitioners might be divulged, with possible serious consequences to the individuals. These allegations—if they had been intended—were of such a character that a body such as the B.M.A. was bound to refute them, and these proceedings accordingly followed.

Mr. Havers went on to say that he was happy to have it on the assurance of Mr. Milmo, on behalf of the *Daily Mirror* and its editor, which assurance Mr. Milmo would repeat in court, that the defendants never intended by the passages in question to impugn the honesty of the B.M.A. or any of its officers, and had never taken the view that the passages could be construed in that sense. As a token of good faith the defendants had agreed to pay a substantial sum, which the Association proposed to allocate to a medical charity, and to indemnify the Association against its costs. In these circumstances the plaintiffs were glad to accept the defendants' assurances and to bring the litigation to a close by asking his Lordship to allow the record to be withdrawn.

Mr. Helenus Milmo said that the *Daily Mirror* in these two issues of Jan. 30 and Jan. 31 had reported allegations that individual doctors might feel themselves intimidated because it was an open ballot. It was suggested that the B.M.A. would be in a position to gain a knowledge of how individual doctors voted and to use that knowledge to the detriment of those individuals who voted in favour of accepting the terms of the National Health Service. The *Daily Mirror*, having been given an opportunity to study the full arrangements for conducting the ballot, was satisfied that every precaution was successfully taken to ensure that how individual doctors voted would not be divulged. The *Daily Mirror* also wished to make it clear that at no time was it intended to question the integrity of the B.M.A., and as a token of good faith the *Daily Mirror* had agreed with the B.M.A. to pay a substantial sum to a medical charity nominated by them and to indemnify them against their costs.

B.M.A. v. Jeger and others

Announcing the settlement of the second libel action, Mr. Havers said that shortly after the plebiscite voting papers had been sent out to the members of the medical profession by the B.M.A. a letter signed by the four defendant doctors appeared in issues of the *Daily Telegraph*, the *Daily Mirror*, and the *Manchester Guardian*. This letter concerned, among other things, the methods proposed for ascertaining the views of the profession by means of the plebiscite. The B.M.A. took the view that the letter was so worded that it would be generally understood that the defendants were accusing the Association and its officials of so dishonestly conducting the plebiscite that, in spite of the Association's pledge to the contrary, the individual voting of practitioners might be divulged with possible serious consequences to the individuals. That allegation, if it had been intended, would, of course, have been one which a body such as the British Medical Association was bound to refute. In this case also, however, the Association had the assurance given by Mr. Paget on behalf of the four defendant doctors that they never intended by their letter to impugn the honesty of the Association or of any of its officers, and had never taken the view that their letter could be construed in that sense. In these circumstances the Association was only too glad to accept that disclaimer and to proceed no farther with the action.

Mr. R. T. Paget, K.C., said that the letter to the newspapers which was the subject of these proceedings was never intended to impugn the honesty of the British Medical Association or of any of its officers and officials, and the defendants and their advisers had never taken the view that the letter could be construed in that sense. The defendants were glad to have this further opportunity of saying publicly that this was not and never had been their intention.

Mr. Justice Hilbery directed that the record in each action should be withdrawn.

[1] *The Times*, Dec. 22, 1948.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The degree of M.A. has been conferred upon Joan M. Boissard, M.R.C.S., L.R.C.P., University Assistant Director of the Public Health Laboratory Service.

The following medical degrees were conferred on Dec. 11:

M.B., B.CHIR.—*H. L. J. Wilson, *Mrs. Camilla B. P. Bosanquet, Pamela E. Davis.

* By proxy.

D. Russell Davis, M.D., M.R.C.P., has been appointed a Manager of the Pinsent-Darwin Fund for three years from Jan. 1.

An election to the Pinsent-Darwin Studentship in Mental Pathology will be made in March. The studentship is of the annual value of about £250 and is tenable for three years. The student must engage in original research into any problem having a bearing on mental defects, but may carry on educational or other work concurrently. Applications should be sent before Feb. 28 to the secretary, Pinsent-Darwin Studentship, Psychological Laboratory, Cambridge. Applicants should state their age and qualifications and the general nature of the research that they wish to undertake. No testimonials are required, but applicants should give the names of not more than three referees.

The following candidates have been approved at the examinations indicated:

FINAL M.B.—*Part I (Surgery, Midwifery, and Gynaecology)*: K. P. Abel, C. A. M. Aitken, G. K. Barker, A. Bates, H. H. G. Bell, J. F. Boyle, B. I. Brown, P. Bryan-Brown, D. Bulmer, J. F. C. Callow, C. C. Clapham, P. B. Corston, W. G. Dawson, G. H. Dunkerley, J. V. Earle, R. W. Fairhead, P. A. Freeman, A. C. Gibson, J. R. Gough, G. A. Gresham, B. M. Grimmett, E. C. B. Hall Craggs, G. F. Hargreaves, G. E. Heald, A. R. H. Hicks, R. N. T. Higgins, B. J. Hockey, F. W. Huddy, L. B. Hunt, I. P. James, M. J. Kehoe, D. S. Kerr, H. P. Kilner, D. G. A. Leggett, H. K. N. Lister, H. P. Lottenberg, C. McCance, A. McGregor, R. B. McGrigor, T. C. K. Marr, J. D. Marsh, M. Marshall, H. M. Michaelson, E. Monkhouse, A. D. Moore, W. P. L. Morrison, J. E. Naylor, J. H. Neame, D. H. Nixseaman, B. W. Peckett, P. T. Perkins, S. T. H. H. Pilbeam, M. T. Pym, P. J. Roffey, C. A. Rogerson, R. A. Rowan, K. H. L. Scougall, I. H. Seppelt, M. J. Smith, J. F. Soothill, J. Stevens, R. A. Struthers, T. J. Sullivan, M. K. Sykes, C. D. Thompson, P. W. Thompson, A. C. Townsend, T. H. H. Wade, D. P. Wagstaff, C. B. Walker, J. F. Watkins, E. J. Watson-Williams, D. D. Webb, B. K. Westlake, J. L. Whitby, M. Wilkinson, J. P. Williams, P. O. Williams, E. J. C. Wynne, J. G. O. W. Yerburgh. *Part II (Principles and Practice of Physic, Pathology, and Pharmacology)*: R. D. Allen, P. J. Andrew, J. A. Balint, G. B. Barker, D. A. A. Beardsmore, G. P. Blanshard, T. B. Boulton, A. Brook, J. C. Burne, M. L. Cox, R. D. Cundall, P. G. R. Dench, J. R. Edsall, H. E. Flint, J. M. Gibson, J. G. Gill, R. V. Grange, J. Halford, D. R. Harrocks, E. W. Heining, G. R. Hervey, J. B. Howells, W. P. Kelly, W. I. N. Kessel, T. C. Langdon, G. A. D. Lavy, K. W. Leech, D. E. Lewin, L. Linder, J. D. Llywelyn-Jones, P. H. Lord, C. B. McKerrow, J. W. MacLeod, B. K. Madden, G. Melvill Jones, J. L. Millard, A. D. Moore, T. H. Morgan, G. C. Myddelton, J. E. Naylor, A. E. Neill, P. C. J. Nicholl, D. N. Phear, M. I. M. Pines, T. M. Robinson, R. A. Rowan, F. R. Ryle, F. D. Schofield, M. E. Sidaway, R. S. Smith, T. H. H. Wade, T. J. D. Walker, J. C. Wardill, A. L. Wells, R. B. Wright, J. G. O. W. Yerburgh.

UNIVERSITY OF EDINBURGH

The University of Edinburgh gave a dinner on Dec. 10 in honour of the School of Medicine of the Royal Colleges, which has now been incorporated in the Medical Faculty of the University. Professor Sydney Smith, Acting Principal of the University, was in the chair, and there were also present the President of the Royal College of Physicians of Edinburgh, the Vice-President of the Royal College of Surgeons of Edinburgh, the Chairman of the Board of Governors of the School of Medicine of the Royal Colleges, other representatives of the Colleges, former members of the teaching staff of the Medical School, and members of the University Faculty of Medicine.

The Acting Principal proposed the toast of the School of Medicine of the Royal Colleges, which was replied to by Dr. W. D. D. Small, President of the Royal College of Physicians, Mr. J. M. Graham, Vice-President of the Royal College of Surgeons, and Mr. W. J. Smart, Chairman of the Board of Governors of the School of Medicine. Dr. John Orr, formerly Dean of the School of Medicine, proposed the toast of the Faculty of Medicine. Professor T. J. Mackie, Acting Dean, replied on behalf of the Faculty. The Acting Principal, in proposing the toast of the School of Medicine, said that the school had been formally established only in 1895, but that its history went back to a much earlier time. The Guild of Barber Surgeons, which received its Charter in 1505, had been responsible for training its members, and from their foundation the Royal College of Physicians (1681) and the Royal College of Surgeons (1778) had interested themselves in the advancement and teaching of medicine and surgery. Before and after the formal establishment of the Faculty of Medicine within the University in 1726 classes were given by private individuals, who formed an extra-mural group of teachers more or less under the auspices of the Royal Colleges. This extra-mural school proved both a rival and a stimulus to teaching within the University. The brilliance of its teachers attracted students from many parts of the world, and, free from formalities, it was instrumental in introducing certain courses of study long before lectureships in the same subjects were provided within the University. Throughout the nineteenth century, also, many of the most distinguished professors in the University made their reputations as teachers in the extra-mural school. In later as in earlier years much of the renown of the Edinburgh Medical School was due to the work of the extra-mural school, and the University gladly acknowledged its debt to the School of Medicine of the Royal Colleges with which it had worked in friendly rivalry and co-operation for so long. Now, however (Professor Smith continued), circumstances had changed. With the progress of medical science and the increasing expense of providing medical teaching it was no longer possible to continue two teaching institutions in a city the size of Edinburgh, and the Colleges had shown wise statesmanship in deciding to merge their school with the Medical Faculty of the University. For the future, therefore, there would be one institution only for undergraduate teaching, and the Royal Colleges—relieved of their responsibilities at the undergraduate stage—would be free to concentrate on higher medical education through their interest in the Joint Board of Postgraduate Medical Studies. Concluding, the Acting Principal expressed the confident hope that with the combination of interests represented on that Board, and with the same co-operation between the University and the Colleges which had for so long been a feature of the Edinburgh School, the Postgraduate School would be no less renowned than had been its undergraduate predecessor.

At a Graduation Ceremonial on Dec. 17 the following medical degrees were conferred:

M.D.—[1]J. M. Alston, W. J. Matheson, Helen R. Neve.
C.M.—[2]E. A. Jack.
PH.D.—In the Faculty of Medicine: I. F. Sommerville.
M.B., CH.B.—Dores Baxter, H. Cameron, Isabel A. Cossar, J. Darnborough, J. C. Edie, W. D. Elliott, A. C. Ferguson, I. G. P. Fraser, G. B. Goodman, A. Gordon, P. F. Green, D. H. Haworth, S. P. A. Henderson, J. W. Herries, C. F. Hogg, J. T. Lamb, M. H. Lawrence, A. C. MacRae, Ann H. Miller, M. M. Milne, P. A. Moffat, Agnes C. D. Penman, T. R. Preston, M. L. Roden, B. H. Shiel, Catherine B. G. Sinclair, D. M. W. Smith, C. C. R. Walker, D. C. M. Wilcox.

Medical diplomas were granted as follows:

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—[3]S. R. A. Messih.
DIPLOMA IN MEDICAL RADIODIAGNOSIS.—[3]L. D. Keegan, [3]L. D. Philp, [3]P. St. G. Robinson.
DIPLOMA IN MEDICAL RADIOTHERAPY.—[3]J. A. Caskey, [3]W. B. Dawson, [3]Mary A. J. T. Douglas, [3]J. F. Riley.
[1]Awarded medal for thesis. [2]Highly commended for thesis. [3]In absentia.

UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC, TRINITY COLLEGE

The following candidates have been approved at the examinations indicated:

M.D.—E. Howitt, A. H. Isaacson, F. M. Lanigan-O'Keeffe, J. B. Ryder, Sheila Sheehan.
M.A.O.—J. D. Llewellyn-Jones.
M.B.—[1]D. W. Kyle, [2]Dorothy I. Ogden, [2]J. S. P. Lane, [2]Ivy P. Robinson, C. G. H. Charlton, M. H. Fruithof, Peggy Moore, B. J. O'Reilly, G. N. Constable, Germaine H. Ross, E. W. Eppel, P. F. Eustace, W. A. McGaw, H. Parsons.
B.CH.—K. C. Mullen, T. M. W. Redman, E. M. Clein, Winifred D. Eadie, E. A. Jackson, W. H. Lefcovitch, J. K. McCall, S. F. Shilliday, S. D. Boland, M. D. Bamber, Olivia M. Welsh, J. Diamond.
B.A.O.—J. P. B. Tuohy, H. Parsons, N. Furlong, Olivia M. Welsh.
[1]First-class honours. [2]Second-class honours.

The following medical degrees were conferred on Dec. 9:

M.D.—E. Howitt, Sheila Sheehan.
M.A.O.—J. D. Llewellyn-Jones.
M.B., B.CH., B.A.O.—M. D. Bamber, S. D. Boland, E. M. Clein, G. N. Constable, J. Diamond, Winifred D. Eadie, P. F. Eustace, M. H. Fruithof, E. A. Jackson, J. S. P. Lane, W. H. Leon, J. K. McCall, Peggy Moore, K. C. Mullen, Dorothy I. Ogden, T. M. W. Redman, Ivy P. Robinson, S. F. Shilliday, Olivia M. Welsh.

UNIVERSITY OF DURHAM

The following candidates have satisfied the examiners at the examination indicated:

FINAL M.B., B.S.—G. L. Anderson, Anne R. Boon, P. G. Buck, Maureen T. Cunningham, June Dickson, Irene N. Dodd, Mildred C. Gardner, Sheila L. Harrison, Elizabeth J. Hunter, Alix P. M. Hurst, Eileen Hutton, Hazel E. Jopling, R. N. C. Lockey, J. McManners, J. G. Noble, Edith M. Robertson, D. Smith, J. D. R. Smith, Joan Stephens, A. E. Wright.

UNIVERSITY OF LONDON

The title of Professor of Pathology in the University has been conferred on Howard William Copland Vines, M.D., in respect of the post held by him at Charing Cross Hospital Medical School.

The title of Professor of Chemical Pathology in the University has been conferred on Jocelyn Patterson, Ph.D., M.Sc., in respect of the post held by him at Charing Cross Hospital Medical School.

A special University lecture in dentistry will be given by Professor G. Toverud, Director of the Department of Pedodontia in the Dental School, Oslo, in the Senate House of the University (entrance from Russell Square or Malet Street) on Wednesday, Jan. 12, at 5.30 p.m. His subject is "The Influence of General Health Supervision on the Frequency of Dental Caries in Groups of Norwegian Children." The lecture is addressed to students of the University and to others interested in the subject. Admission is free, without ticket.

UNIVERSITY OF MANCHESTER

The following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—Margaret Armitstead, Mary P. Armstrong, J. M. Bernstein, P. H. Bracewell, V. Broadhurst, R. B. Charnock, M. Cohen, J. L. Cotton, B Gill, Doreen M. Ginever, Barbara Hall, B. Hendy, Muriel M. Hughes, H. McIntyre, C. A. Mays, K. Rawnsley, W. R. Riley, Beatrice E. Sleigh, R. V. Sykes, Ruth Tattersall, D. B. S. Taylor, I. G. Taylor, Helen L. S. Tennent, J. B. D. Torr, J. D. Villiers, J. M. Watt, H. L. Wayne, Doreen Wilkinson. *Part I:* H. G. Arnall, P. Feingold, H. Holgate, J. R. Jaffe, B. P. Jones, G. Kettlewell, H. A. Mitchell, Margot Nelken, J. A. Platt, C. W. M. Pratt, I. A. Susman, R. M. Thomson, C. A. Unsworth, J. M. Watt.
DIPLOMA IN PSYCHOLOGICAL MEDICINE.—*Part II:* E. Gostynski, H. F. Jarvie.

UNIVERSITY OF BRISTOL

The following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—R. J. Carey, Anne B. Cousins, Vera H. M. Dowling, D. N. Fitzgerald, Margaret Ford, Anne M. French, B. T. Hale, G. A. Hanks, Kathleen J. Harrison (with distinction in public health), Joan A. Higginbottom, Una P. Jones, A. H. Laxton, A. J. Lee, D. B. Peacock, Elizabeth Preston-Thomas, G. T. Salter, P. J. Speller, Maro A. Wells. *Group I (completing examination):* G. D. Teague, A. S. Wallace. *Group II (completing examination):* Pamela L. C. Watson. *Group II only:* June Morgan, J. S. R. R. Old.
DIPLOMA IN PSYCHOLOGICAL MEDICINE.—*Part II:* M. A. X. Cocheme, V. G. Crotty, W. A. Heaton-Ward.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The Faculty of Dental Surgery of the Royal College of Surgeons of England has arranged a series of lectures on anatomy, applied physiology, and pathology in their application to dental surgery and in dental histology, to be given at the College (Lincoln's Inn Fields, London, W.C.) at 5 p.m. and 6.15 p.m. on various dates beginning on Jan. 24 and ending on Feb. 18. The Faculty has also arranged a series of lectures on general, oral, and dental surgery to be given at the College at 5 p.m. and 6.15 p.m. on various dates beginning on Feb. 21 and ending on March 18. The fee for each course is £10 10s. (one lecture 10s.); Fellows and Members of the College and Fellows and Licentiates in Dental Surgery of the College, £6 6s. (one lecture, 7s. 6d.). Admission cards may be obtained from the secretary of the Faculty at the above address.

At a meeting of the Council of the College held on Dec. 9, with Lord Webb-Johnson, President, in the chair, the award of Mackenzie Mackinnon Research Fellowships to Mr. W. J. Atkinson and Dr. C. F. Hawkins was reported. Dr. Horace Evans was elected a Hunterian Professor.

Diplomas of Fellowship were granted to the following successful candidates:

K. MacK. MacLeod, M. Ellis, E. Troensegaard-Hansen, A. B. Dempsey, E. P. Clarke, C. L. Clinton-Thomas, M. Glick, C. T. A. Burgess, L. F. W. Salmon, C. R. Savage, T. Fenwick, D. H. Campbell, P. W. Hunt, K. P. S. Caldwell, J. Ll. Temple, R. N. Grant, J. S. A. Linton, M. F. Pilcher, D. P. B. Turner, D. A. Barley, B. L. N. Morgan, L. B. Cohen, A. C. Higgitt, J. V. Morris, J. H. E. Verdon, G. B. R. Walkey, R. D. Wilkins, H. M. Jones, E. H. M. Foxen, E. Haigh, J. G. Brockis, J. A. Ll. Davies, J. C. Fulford, O. Daniel, R. N. Tickhurst, J. F. R. Withycombe, G. W. Taylor, D. H. Randall, P. H. Huggill, P. F. Jones, P. G. Large, B. W. T. Pender, J. M. Davis, J. Andrew, K. E. D. Shuttleworth, R. J. Williams, R. Ll. B. Roberts, E. J. M. Weaver, D. L. B. Farley, M. J. Roper-Hall, G. J. Hadfield, J. A. MacDougall, A. Sinnatamby, I. W. Ball, F. J. Damato, S. J. H. Miller, J. M. G. Nixon, J. L. Wright, A. Young, P. F. Howden, G. C. Jennings, T. H. Wilson, P. L. Brunnen, E. M. Corris, W. Gordon, G. H. Levien, C. W. D. Lewis, A. K. Saha, Jean R. C. Burton-Brown, C. T. Collins, J. G. Gow, T. S. S. Gregory, J. D. Morgan, C. Parish, D. L. Shaw, T. H. Twerdy, C. B. R. Mann, H. G. Smith, M. Ahmad, H. M. Bradmore, J. W. E. Raine, S. Rajanayagam, J. B. Blacklay, B. H. Courtice, J. R. Kirker, K. R. Lothian I. Monk, E. H. Paterson, D. A. Sarsfield, R. E. Shaw, P. Ahluwalia, R. D. Anklesaria, K. D. Koshal, W. A. McAlpine, Marion J. Phillips, J. V. Ellis, P. G. Laing, D. Tooms.

Diplomas of Fellowship in Dental Surgery were granted to thirty-one candidates, including the following members of the medical profession: N. J. Ainsworth, G. A. Cowan, H. H. Kenshole, O. H. Wicksteed, J. W. Mansie, J. H. Hovell, M. P. Graham, and T. Cradock Henry.

Diplomas of Membership were granted to T. McKendrick and D. A. G. Williams.

Diplomas were granted jointly with the Royal College of Physicians of London as follows:

TROPICAL MEDICINE AND HYGIENE.—B. N. A. Beetles, M. A. Chowdhry, Joan E. Jermyn.

MEDICAL RADIO-DIAGNOSIS.—J. W. Pierce.

ANAESTHETICS.—O. H. E. Bayles, O. D. Bhati, J. Bullough, L. Clement, Patricia F. de C. Coles, Elsa R. Cooper, J. A. L. Cooper, D. H. Couch, J. Davidson, Eleanor Davies-Jones, E. Fowler Ilse R. Hadelmayr-Kuhn, W. K. Jones, E. J. Leighton, Bertha A. McDougall, T. Magner, J. M. Marchant, A. J. Merry, A. A. McC. Miller, L. E. Mosscrop, G. P. Murtagh, D. K. W. Picken, W. L. Price, Silvia W. Pyddoke, L. W. Ritchie, F. L. Robertshaw, J. G. Robson, J. E. Schofield, W. R. Scott, Doris N. A. Smith, J. K. Sugden, J. H. Wakely, Pamela Westhead, D. Zuck.

INDUSTRIAL HEALTH.—J. W. Webb.

The following hospitals were recognized under the F.R.C.S. regulations: District Infirmary, Ashton-under-Lyne (resident surgical officer, until Dec. 31, 1950); Kent and Canterbury Hospital (additional recognition of ear, nose, and throat and ophthalmic house-surgeon and orthopaedic house-surgeon); the West Kent General Hospital (one house-surgeon); Boundary Park General Hospital, Oldham (resident surgical officer); the South Devon and East Cornwall Hospital, Plymouth (additional recognition of senior house officer (surgical) at Freedom Fields).

Medical Notes in Parliament

Capitation Fee

Sir WAVELL WAKEFIELD on Dec. 16 asked the amount of capitation fee doctors were receiving for their patients.

Mr. BEVAN said there was a fund of 18s. multiplied by 95% of the civil population. From this an agreed deduction was made for mileage payments, making the distributable fund about 17s. 5d. multiplied by 95% of the civil population. The actual payment per person on a doctor's list in any particular executive council's area varied with the proportion of the population who were on the lists of that area. He would not be able to say until after the end of the financial year what was the actual rate payable in each executive council's area. The representatives of the British Medical Association never expected that the rate would not be less than 18s. They knew that there would be certain agreed deductions from this. Sir WAVELL WAKEFIELD said the majority of doctors were suffering from this misapprehension.

Colonel STODDART-SCOTT asserted that the amount of money available for the doctors had been agreed on when it was thought 18,000 practitioners would come into the scheme. Now that 19,000 had come in, should not a larger amount of money be made available?

Mr. BEVAN said Colonel Stoddart-Scott's information was incorrect. The doctors were adequately represented and discussions were taking place between the Ministry of Health and representatives of the profession. He hoped members would await the result of those discussions before organizing a "single pressure lobby."

There were protests at this. Colonel ELLIOT asked Mr. Bevan to avoid making inflammatory and insulting speeches as he had done when the previous discussions were under way.

Mr. BEVAN said that the Opposition would probably seek an opportunity of discussing these matters. He reminded them that they could not seek to increase each item and expect the total to be low.

Amending Bill

Mr. BEVAN told Mr. COLLINS on Dec. 16 that he proposed to accept the recommendations of the Legal Committee on Medical Partnerships. So far as legislation was required, proposals would be made in the forthcoming Bill to amend the National Health Service Act. He hoped there would not be much delay in introducing this legislation.

Public and Private Prescribing

On Dec. 16 Sir WAVELL WAKEFIELD asked Mr. Bevan to indicate the administrative difficulties which prevented the disallowing of prescriptions prescribed at the public expense, but not conforming to required conditions, by doctors in the State service for private patients, while similar prescriptions by the same doctors for State patients could be disallowed.

Mr. BEVAN said a doctor in the Service who prescribed for patients treated under the Service substances which were afterwards found not to be drugs or not to be necessary for the proper treatment of the patient was subject to the disciplinary procedure provided in the regulations. The regulations did not, however, apply to private patients, for whom there was no prescribing at the public expense.

Replying later to Mr. ASTOR, Mr. BEVAN said he was unaware of any general abuse of medical prescriptions under the Health Service. There were a number of individual cases. Disciplinary procedure was provided to deal with them. He wanted it to be firmly and promptly used.

Cost of N.H.S.

Answering Colonel STODDART-SCOTT on Dec. 16, Mr. BEVAN recorded that the total amounts paid out of public funds since July 5 and up to Nov. 30, 1948, in respect of hospital services, general medical services, pharmaceutical services, general dental services, and ophthalmic services were as follows:

	£
Hospital services	58,000,000
General medical services	7,982,994
Pharmaceutical services	5,438,709
General dental services	5,541,658
Ophthalmic services	4,047,568

He added that the total liability incurred in that period could not be stated.

Statements of probable expenditure for the financial year 1948–9 had recently been received from all regional hospital boards and were being examined. None had yet been approved. All regional hospital boards had also submitted estimates for the financial year 1949–50. Gross expenditure as shown in these estimates as received was £157,680,000; of this, £10,236,000 represented capital expenditure. Income was given as £9,021,000.

Artificial Insemination

On Dec. 16 Mr. ERIC FLETCHER asked the Minister of Health what instructions he proposed to issue as to the entries to be made in registering births resulting from human artificial insemination A.I.(D.).

Mr. BEVAN said no fresh instructions were necessary. Registrars already had instructions to ask every birth informant for the name of the child's father. If the informant could not give this information the columns of the birth entry containing particulars of the father were to be left blank. So far as he knew, this procedure had no bearing on the legitimacy of the child.

Cardiff Doctors

Mr. BEVAN stated on Dec. 16 that fourteen doctors in Cardiff each had more than 4,000 registered patients. The highest number of people registered with one doctor in Cardiff was 7,190. This doctor practised in a partnership employing two assistants. Seventeen Cardiff doctors had applied for the basic salary of £300.

Mr. GEORGE THOMAS asked whether Mr. Bevan knew of the difficulty caused in Grangetown, Cardiff, by four doctors operating from one small surgery, having closed their other surgery when the National Health Service started; and whether, in view of the daily queue caused, he would ensure that another surgery was made available.

Mr. BEVAN replied that a doctor was required under the regulations to provide proper and sufficient surgery and waiting-room accommodation for his patients. This case had been considered by the Cardiff Executive Council, who had drawn the practitioners' attention to the need for full compliance with the terms of these regulations.

Dental Estimates

Sir HUGH LUCAS-TOOTH on Dec. 16 inquired what was the total value of estimates approved by the Dental Estimate Board in Eastbourne for each of the months July, August, September, October, and November.

Mr. BEVAN replied that the total values of the approved estimates included in schedules sent for payment to executive councils were:

	£	s.	d.
July	51,253	3	0
August	303,677	2	3
September	997,125	7	9
October	1,882,608	13	3
November	2,461,134	17	2
Total	5,695,799	3	5

He added that not all these schedules would have reached executive councils in time for payment to have been made to the dentists by Nov. 30.

No. 50

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec. 11.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. *Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for:* (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland. A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1948					1947 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	39	4	19	—	—	64	6	18	1	—
Deaths		2	—				2	—		
Diphtheria	144	12	45	7	9	233	19	67	14	10
Deaths	2	—	—	—	—	4	—	—	2	—
Dysentery	69	13	44	—	—	106	7	28	1	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	—	—	—	1	—	—	—	—
Deaths		—					—			
Erysipelas			30	21	2			29	14	2
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				36					22	
Deaths	29	—	7	1	2	62	7	19	3	2
Measles*	10,094	176	147	51	63	3,379	156	410	192	20
Deaths†			—	—	—	1	—	—	—	—
Ophthalmia neonatorum	36	5	20	—	—	58	4	8	1	—
Deaths										
Paratyphoid fever	3	1	1 (B)	—	—	3	1	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	1,027	81	9	1	6	723	29	8	3	5
Deaths (from influenza)‡	24	4	3	—	—	23	2	5	2	—
Pneumonia, primary			397	28				319	22	
Deaths	321	71		3	18		53		11	14
Polio-encephalitis, acute	1	—				7	3			
Deaths							—			
Poliomyelitis, acute	35	4	3	2	—	77	4	11	4	5
Deaths§	1	—					—			
Puerperal fever		—	8		—		2	10		—
Deaths										
Puerperal pyrexia‖	98	8	2	—	—	116	9	9	·4	—
Deaths		—					1			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,410	85	287	170	45	1,939	131	296	32	44
Deaths†			—	—	—	2	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	4	1	2	—	—	10	—	4	4	—
Deaths	—	—	—	—	—	—	—	1	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,522	187	159	74	9	1,737	92	38	29	5
Deaths	13	1	3	—	—	4	—	—	—	—
Deaths (0–1 year)	360	54	60	13	7	389	41	79	19	25
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,497	944	659	154	107	5,493	817	804	200	159
Annual death rate (per 1,000 persons living)			13·3	9·6				16·7	12·6	
Live births	7,212	1220	867	303	227	8,044	1367	945	419	252
Annual rate per 1,000 persons living			17·5	19·0				19·0	26·4	
Stillbirths	219	24	21	—		236	36	26		
Rate per 1,000 total births (including stillborn)			24					27		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Influenza Epidemic in Italy

The current influenza epidemic in Italy, although widespread, is said to be a relatively mild form of the disease. According to the World Health Organization's Division of Epidemiology, by mid-December the disease was continuing on an epidemic scale in Rome and was widespread both in the central and southern provinces of the mainland and also in Sardinia. More recent information indicates that the infection has since spread to the northern provinces.

It appears that the influenza has run a mild clinical course in all affected regions. It is characterized by high fever which persists for two or three days but then diminishes progressively to normal. Attacks usually last four to five days in all. Fatal lung complications have been observed only among the aged. In this connexion it is noted that the number of deaths from bronchopneumonia does not exceed the seasonal average. Laboratory studies at Sassari, in Sardinia, have identified the strain as virus B.

Sickness and Diarrhoea at Chatham

An outbreak of vomiting affecting 58 children but no member of the staff occurred at a Chatham secondary school on Nov. 18, 1948; 20 of the affected children had diarrhoea and sickness. Most of the children were sick between 1.30 and 3.30 p.m., but 10 reported that sickness began at home after 4 p.m. All the affected children were able to go home at 4 p.m., and with one exception all returned to school the following day. About half the children had school milk (pasteurized) in the morning, and 53 of the 58 had the school dinner of cottage pie with greens, and macaroni pudding with jam sauce, served at 12.15 p.m. The 5 who did not have their dinner in school were in a classroom where about a dozen children were sick.

The central kitchen where the dinner was cooked is well equipped, and the hygiene of the premises, equipment, and staff is good. Two of the staff had colds. None had skin lesions. On the day in question 955 dinners were distributed in the cooking containers to six different schools. In the school where the trouble occurred 313 meals were consumed by pupils and staff. No other school was affected. The children do not sit in class groups for dinner. No particular class was attacked. It is not known if the affected children were served from the same containers or by the same person. The minced meat portion of the cottage pie had been precooked on the previous day and stored overnight in the refrigerator on large enamel trays. It was reheated with a covering of mashed potato in the oven the following morning. The remainder of the food was prepared and cooked just before being distributed.

Food containers and crockery were washed immediately after dinner, and no food was available for bacteriological examination. Swabs were taken from the throat, nose, and hands of the kitchen staff, and from 12 *Staphylococcus pyogenes* was recovered on culture, in two cases from all three sites. Two specimens of vomit were submitted for examination and *Staphylococcus pyogenes* isolated. None of the cultures isolated from the food handlers was identical with those obtained from the two vomits. The possibility of metallic poisoning from the food containers was excluded. A complete bacteriological investigation was not possible, and the limited inquiry does not support the preliminary assumption that the symptoms were due to the presence of a staphylococcal enterotoxin in a small proportion of the total food consumed.

Discussion of Table

In *England and Wales* an increase was recorded in the notifications of measles 1,532 and acute pneumonia 130; decreases were reported for scarlet fever 117, whooping-cough 40, and acute poliomyelitis 16.

Large increases in the incidence of measles occurred in Lancashire 514, Yorkshire West Riding 352, Essex 99, Lincolnshire 95, and Middlesex 85. There was a decline of 48 in the notifications of scarlet fever in Yorkshire West Riding.

There were decreases in the incidence of whooping-cough in Yorkshire West Riding 44 and Durham 32, with a rise of 46 in London. A small rise occurred in the incidence of acute pneumonia in every region except in the south-eastern counties, where no change occurred.

An outbreak of dysentery affecting 8 persons was notified from Cheshire, Wirral R.D.; the only other large return was Lancashire 12. Notifications of acute poliomyelitis were the lowest since the middle of July; the largest returns during the week were London 4, Yorkshire West Riding 4, Middlesex 3, and Nottinghamshire 3.

In *Scotland* increases were recorded in the number of notifications of acute primary pneumonia 60 and whooping-cough 27.

There was a decrease of 18 in the notifications of measles. Notifications of diphtheria fell from 21 to 10 in Glasgow, but this was compensated for by a rise of 12 in the remainder of the western area.

In *Eire* a fall was reported in the notifications of measles 39 and scarlet fever 24, while a rise of 16 was recorded for whooping-cough.

In *Northern Ireland* a decrease of 9 in the notifications of scarlet fever and an increase of 5 for diphtheria were the chief changes in the trends of infectious diseases.

Week Ending December 18

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,426, whooping-cough 2,471, diphtheria 124, measles 9,800, acute pneumonia 1,082, cerebrospinal fever 35, acute poliomyelitis 28, dysentery 54, paratyphoid 1, and typhoid 7.

Medical News

Chadwick Medals

The Chadwick Trust recently awarded Chadwick Medals to the nominees of nine provincial universities where sanitary science is taught, or where the Diploma of Public Health is given. The inscription on each medal was as follows: "Chadwick Medal for excellence in the study of Hygiene and of the Sanitary Idea." The names of the nine recipients are as follows, with the universities indicated in parentheses: C. R. Lowe, M.B., Ch.B., D.P.H. (Birmingham); William Nicol, M.B., Ch.B., D.P.H. (Bristol); G. W. Knight, M.B., Ch.B., D.P.H. (Leeds); H. O. M. Bryant, M.B., Ch.B. (Liverpool); D. G. Crawshaw, M.B., Ch.B., D.P.H. (Manchester); William Watt, M.B., Ch.B., D.P.H. (Aberdeen); Gerald O. Mayne, M.B., Ch.B., D.P.H. (Edinburgh); Angus N. MacPhail, M.B., Ch.B., D.P.H. (Glasgow); Sheena M. Allardice, M.B., Ch.B., D.P.H. (St. Andrews).

London School of Hygiene and Tropical Medicine

The Langley Memorial Prize, which is open to competition among officers, past and present, of the Colonial Medical Service who are serving, or who have served, in West Africa, has been awarded to Dr. D. G. Fitzgerald Moore for his paper entitled "Nutritional Eye Disease and Effects of Nutritional Retrobulbar Neuritis."

University Grants Committee

The following medical men are among the members of the University Grants Committee, which has been reconstituted: Professor E. D. Adrian, O.M., F.R.S., Professor G. W. Pickering, and Professor J. C. Spence.

Dr. S. L. Simpson

Dr. S. Leonard Simpson has been elected an Honorary Corresponding Member of the French Society of Endocrinology.

"Agene" Process Prohibited in U.S.A.

The use of nitrogen trichloride to improve and bleach flour (the "agene" process) is to cease in the U.S.A. from Aug. 1 as the result of an inquiry set up under the Food and Drug Administration. Sir Edward Mellanby, F.R.S., first showed that agenized flour causes hysteria in dogs; his paper appeared in 1946 in this *Journal* (Dec. 14, p. 885). Chlorine dioxide is to be allowed instead of nitrogen trichloride.

Wills

Colonel Sir Harry Edwin Bruce Bruce-Porter, K.B.E., C.M.G., left £42,618. Mr. Cyril Alban Raison, of Birmingham, left £29,557 and bequeathed £2,000 to the Faculty of Medicine of the University of Birmingham to endow "The Cyril Raison Prize" in surgical diseases in children. Dr. Thomas Gwynne Maitland, late medical superintendent, Cunard White Star Line, left £3,611.

COMING EVENTS

Legislation and the Family

A conference on "The New Social Legislation and the Family" will be held at the Conway Hall, Red Lion Square, London, W.C.1, on Jan. 20 and 21, 1949, by the British Social Hygiene Council and the Town and Country Planning Association. It is intended mainly for representatives of local authorities, but social workers and others may be interested. Information may be obtained from the British Social Hygiene Council, Tavistock House North, Tavistock Square, London, W.C.1.

Society of Anaesthetists of South Wales

A Society of Anaesthetists of South Wales is in the process of formation and a meeting with this end in view will be held at Cardiff Royal Infirmary on Wednesday, Jan. 12, 1949, at 8 p.m. All those whose main interest is in anaesthesia are invited to attend the meeting.

Lecture-demonstrations

A series of lecture-demonstrations on psychiatry and neurology will be held in the large lecture theatre of St. George's Hospital Medical School, Hyde Park Corner, London, S.W., on Thursdays at 4.30 p.m., from Jan. 6 to March 17. They are open, without fee, to all postgraduates and senior medical students.

SOCIETIES AND LECTURES

Tuesday

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—Jan. 4, 5 p.m. "*Zoonoses (Parasitic Infections),*" by Dr. M. Sydney Thomson.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., Jan. 4, 11 a.m. "*Some Aspects of Leucorrhoea,*" by Dr. W. N. Mascall.

Wednesday

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., Jan. 5, 11 a.m. "*Gonorrhoea in the Female,*" by Dr. W. N. Mascall.

LONDON COUNTY MEDICAL SOCIETY.—At Furnivall House, Cholmondeley Road, London, N., Jan. 5, 4.30 p.m. Annual general meeting. Address by the retiring president, Mr. J. R. M. Whigham.

SOCIETY OF CHEMICAL INDUSTRY: NUTRITION PANEL OF THE FOOD GROUP.—At Gas Industry House, 1, Grosvenor Place, London, S.W., Jan. 5, 6.30 p.m. "*The Sausage as Food,*" discussion to be opened by Mr. H. P. Blunt, Mr. Osman Jones, Mr. M. G. Read, and Dr. Magnus Pyke, Ph.D.

Thursday

FACULTY OF HOMOEOPATHY.—At Royal London Homoeopathic Hospital, Great Ormond Street, London, W.C., Jan. 6, 5 p.m. "*Head Hunters in Great Ormond Street,*" by Drs. W. Lees Templeton and Charles O. Kennedy.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—Jan. 6, 5 p.m. "*Cutaneous Tuberculosis,*" by Dr. G. B. Dowling.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., Jan. 6, 11 a.m. "*Local Complications of Gonorrhoea in the Female,*" by Dr. W. N. Mascall.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—At Large Lecture Theatre, Jan. 6, 4.30 p.m. Lecture-demonstration: Psychiatry.

Friday

MAIDA VALE HOSPITAL MEDICAL SCHOOL, Maida Vale, London, W.—Jan. 7, 5 p.m. Case demonstration by Dr. D. McAlpine.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Apley.—On Dec. 16, 1948, at Woking Maternity Home, to Janie, wife of A. G. Apley, F.R.C.S., West Lodge, West Byfleet, a son.

Barry.—On Dec. 15, 1948, at March, Wilmslow, to Monica (née Craig), wife of C. T. Barry, M.D., D.A., a third son.

Ffrench.—On Nov. 28, 1948, to Marjory and Geoffrey Ffrench, of Pleasant Street, Woodside, Halifax County, Nova Scotia, a daughter.

Parker.—On Dec. 15, 1948, to Kath'een (née Hewlett Johnson), wife of Geoffrey Parker, D.S.O., F.R.C.S., a son—Nicholas James.

Watson.—On Dec. 13, 1948, at the County Hospital, Bangor, to Megan (née Wynne Jones), wife of Claud C. M. Watson, M.B., Ch.B.Ed., a son—David.

DEATHS

Bennett.—On Dec. 21, 1948, at Mildenhall, William Fay Bennett, M.R.C.S., of Barrow, Suffolk.

Bennett-Jones.—On Dec. 14, 1948, at 5, Gambier Terrace, Liverpool, William James Bennett-Jones, M.D., M.R.C.S., F.F.A., aged 75.

Bhat.—Recently, at Karkala, India, Kasargod Somanath Bhat, M.R.C.S., L.R.C.P., aged 63.

Bunting.—On Dec. 15, 1948, William Hartley Bunting, M.D., F.R.C.S.Ed., of Middleton Cottage, Salwarpe, Droitwich, aged 80

Colledge.—On Dec. 19, 1948, at 2, Upper Wimpole Street, London, W., Lionel Colledge, F.R.C.S.

Jamieson.—On Dec. 16, 1948, at Thorne Bank, Great Eccleston, Lancs, Alexander Brown Jamieson, M.B., Ch.B.Ed

Logie.—On Dec. 20, 1948, at 15, Craigholm Crescent, Burntisland, Fife, John Moffat Logie, M.B., Ch.B.Ed.

Morrison.—On Dec. 17, 1948, at 19, Cromer Road, North Walsham, Norfolk, Henry Morrison, M.D., aged 54.

Sutton.—On Dec. 20, 1948, at Guildford, David Carlyle Sutton, M.D.Ed.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Leucorrhoea

Q.—*What is the modern treatment of leucorrhoea, excluding cases due to organic disease and to bacterial infections?*

A.—The question rather implies that the term "leucorrhoea" should be reserved for a discharge which is normal in composition but increased in amount. This view coincides with that of the writer, but is not shared by all. If this definition be accepted, then before treatment is instituted it is important to try to assess the amount of discharge. Many women, through ignorance or over-anxiety, may regard the normal as pathological. The activity of the glands lining the genital tract (those in the cervix being the most important) probably varies in different individuals, and sometimes even a rather free secretion is not really abnormal. The vaginal discharge is also physiologically increased premenstrually, during pregnancy, and sometimes about the time of puberty. Ovarian function can also influence the discharge, as is evidenced by the free mucoid secretion from the cervix about the time of ovulation. No treatment other than reassurance and education is necessary in any of the above circumstances.

Increased vascularity or congestion of the pelvic organs, acting either directly on the glands or indirectly by way of an ovarian disturbance, appears to be an important factor in leucorrhoea. By this mechanism many causes—working in hot atmospheres, standing for long hours, sedentary occupation, masturbation, unsatisfied sex urge, chronic constipation, etc.—may operate. Any form of chronic ill-health, and anxiety alone, can also cause leucorrhoea. Treatment depends on the cause, but if this is not obvious the measures adopted should be of a general rather than of a local character—regular physical exercise, daily cold baths, saline aperients, reassurance, etc. Astringent douches are rarely used nowadays. Finally, it should be kept in mind that the excessive discharge may be due to an increased amount of glandular tissue in the cervix—an adenomatous state. In this condition erosion of the cervix (a lesion which is not necessarily a response to infection) is often present, and is best treated by cautery or surgical diathermy.

Penicillin and Vaccinia Virus

Q.—(*a*) *Has the use of penicillin in reducing the bacterial contamination of vaccine lymph (calf lymph) been investigated? If so, please give references.* (*b*) *May I have the names of institutions, if any, which are preparing anti-smallpox vaccine by the egg-culture technique for mass use?*

A.—(*a*) A number of investigations have been carried out on the effects of penicillin in reducing bacterial contamination of vaccine lymph (see Morin, J., and Turcotte, H., *Canad. J. Res.*, Sect. E, 1946, **24**, 149). Similar studies have been made in France (Sevin, A., Bossut, J., D'Halluin, G., and Chenet, C., *Ann. Inst. Pasteur, Lille*, 1948, **1**, 209). In Russia the use of Soviet gramicidin has been recommended (Marchenko, G. F., and Raphman, E. Z., *J. Microbiol.*, Moscow, 1946, No. 3, p. 16), and in South America tyrothricin has been employed (Miranda, C., *Hospital, Rio de J.*, 1946, **30**, 803). There are certain points to be remembered. Whereas pure penicillin has no action on vaccinia virus, impure penicillin may destroy it (Gohar, M. A., and Bashatli, A., *J. trop. Med. Hyg.*, 1946, **49**, 115). Penicillin does not necessarily destroy all contaminants. *Pseudomonas aeruginosa* (*Ps. pyocyanea*) may be quite resistant. D. H. Ducor (*Publ. Hlth Rep. Wash.*, 1947, **62**, 565) used a quaternary ammonium compound derived from coconut oil and said to be a mixture of high molecular weight alkyl-dimethyl-benzyl ammonium chlorides: the preparation is known commercially as "roccal."

(*b*) Investigations are being carried out in Great Britain on vaccinia grown in eggs at the Lister Institute, Elstree, Herts, and at various research centres in America. Egg-culture vaccine is still in the experimental stage and none is yet being issued for mass use.

Cholesteatoma

Q.—*What are the pathology and treatment of a cholesteatoma?*

A.—A cholesteatoma is a rare tumour occasionally found arising from the meninges, commonly at the base of the brain. It is usually well encapsulated and composed of cells of epithelial type containing crystals of cholesterol and arranged in whorls. It is probably of epidermoid origin and of a teratomatous nature. It is innocent. The treatment is surgical.

Trichorrhexis Nodosa

Q.—*What is the cause of splitting of the ends of scalp hair? A female aged 19, otherwise healthy, has suffered from this complaint for four years. Is there a remedy?*

A.—The splitting of the ends of scalp hair (trichorrhexis nodosa) is not a disease but a common condition. It is due to excessive dryness of the hair, such as is caused by too frequent washing, especially with alkalis, some powder shampoos, and spirit lotions without oil or glycerin to counteract their drying effect. Trauma by too hard brushing and rubbing, and from certain types of brushes and sharp-pointed combs, is also a common cause of the breaking of the hair shafts.

Bromidrosis

Q.—*Can you suggest a successful treatment for severe bromidrosis other than a daily bath and change of underwear? What is the cause of this condition?*

A.—The cause is probably endocrine, but gastro-intestinal function may need consideration. The age, sex, and health of the patient have a bearing on the question of treatment. Small doses of stilboestrol are sometimes helpful. Bicarbonate of soda is a good deodorant used in a bath or as a powder, or, if the condition is localized, as a 25% paste. Sodium hexametaphosphate is similarly of value in local treatment used in the same manner. (See also "Any Questions?" Feb. 15, 1947, p. 281, and March 15, 1947, p. 366.)

Trigeminal Neuralgia

Q.—*What is the best medical treatment for trigeminal neuralgia? The preliminary communication on "cuprelone" seems promising. Is this drug obtainable? If so, are any special precautions necessary in its use?*

A.—Treating cases of trigeminal neuralgia with large doses of vitamin B_1 (aneurin or thiamin), Borsook (*J. Amer. med. Ass.*, 1940, **114**, 1421) described marked improvement in 37 out of 58 patients and some improvement in 55 out of 58. He gave 10 mg. daily by intravenous injection, together with a diet rich in vitamin B_1. It is probably sufficient to give vitamin B_1 by mouth, but in large doses such as 25 mg. four times a day. If drugs are to be used, "cuprelone" can be tried. The author of the *Lancet* article (Oct. 23, 1948) says that the toxic effects it produces are negligible, but it is probably too early to say how severe they may be in certain sensitive cases. Since it is a derivative of allylthiourea, it may inhibit the thyroid in some patients. Other drugs which have a good effect are "trilene" (trichlorethylene) and tinctura gelsemii (10 to 15 minims: 0.6 to 0.9 ml. thrice daily).

Bleeding Gums

Q.—*What is the treatment of bleeding gums? I have in mind a woman aged 25, 3-para, with no infection whatsoever in the mouth and whose general health is excellent. A thorough trial of vitamin C, toothpicks, and painting with chromic acid and hydrogen peroxide has led to no improvement, and the patient is afraid of developing pyorrhoea.*

A.—Bleeding gums may be due to numerous causes, both general and local. Clearly, before suggesting any form of treatment it is of the utmost importance to ascertain the cause of the bleeding: thus, vitamin deficiencies (such as scurvy), blood disorders (such as leukaemias), etc., are often associated with spongy bleeding gums. Investigation of the patient's blood is therefore of importance where no local cause is obvious. The most common cause of bleeding from the gums is a gingivitis, which may be mild or severe in extent. This is particularly the case with the rather oedematous type, where the interdental

papillae are swollen and are easily damaged, with subsequent bleeding. Occasionally it is found that in comparatively normal patients with healthy gums bleeding is caused by the excessive and over-zealous use of hard toothbrushes.

Liver Injections in Arthritis

Q.—(*a*) *Is there any evidence to support the giving of liver injections in the anaemia associated with rheumatic and other arthritic conditions? I should be glad to know if there has been any work on this subject recently.* (*b*) *What is the percentage of cases of fibrositis which have a "gouty" pathology, and what is the likelihood of these cases being relieved by either cinchophen or colchicum?*

A.—(*a*) There is no conclusive evidence to indicate that liver injections would influence the anaemia associated with arthritis, but a liver extract would supply vitamin B as well as other substances, and, as so little is known of the pathology of rheumatoid disease, it might be justifiable to try it and watch the effect. In such cases the writer has used a special form orally with good effect on the general condition, but is not aware of any recent work on this aspect.

(*b*) It is impossible to give a percentage of cases of fibrositis which have a gouty pathology. The only plan would be to test for the blood uric acid content; if this is above normal it might be regarded as evidence of a possible gouty cause in the absence of trauma or any abnormality revealed by a thorough *x*-ray examination. Unless the blood uric acid content is increased there is no indication for either colchicum or cinchophen, and much to be said against using either, though the latter might have a temporary analgesic effect; aspirin would be far preferable and, as the salicylates tend to lower the blood uric acid content, more effective.

Rh Factor and Pregnancy

Q.—*In view of the baffling complexity of recently published work on the Rh factor, I should like to know what action should be taken on receipt of a report of "Rh-negative, anti-Rh agglutinins present" on the blood of a woman five or six months pregnant. Is there any danger to the foetus from this in a first pregnancy?*

A.—On receipt of a report that a pregnant woman is Rh-negative and has Rh antibodies in her blood it is advisable to arrange for the confinement to take place in hospital, and to make preparations to transfuse the infant with Rh-negative blood without delay if its cells are found to be sensitized to Coombs's test. Antibodies are unlikely to be present at five or six months in a first pregnancy, and there is little or no danger to the first foetus from this cause, unless in twin pregnancy. In subsequent pregnancies, if a woman is found to be Rh-negative but without evidence of antibodies, it is advisable to be prepared to treat the child if found to be affected, but treatment should not be given without proof of haemolytic disease, because many Rh-negative women fail to become sensitized even after several pregnancies (see *B.M.J.*, 1946, **2**, 641, for details). There is no justification for the interruption of pregnancy unless on grounds that the mother's health is adversely affected—for example, by toxaemia.

Ultra-violet Light and Pulmonary Tuberculosis

Q.—*Is it not possible that the well-known effect of ultra-violet light in stimulating the activity of pulmonary tuberculosis could be made use of by giving ultra-violet light treatment at the same time as bacteriostatic drugs—p-aminosalicylic acid and streptomycin—on the assumption that the increased activity of the organism would increase its metabolic requirements, and that thereby the intake of these drugs by the micro-organism would be greater?*

A.—No. Ultra-violet light can have no possible direct action on tubercle bacilli in the lung. The effect of ultra-violet light or excessive exposure to sunlight on pulmonary tuberculosis is believed to be to cause reflex pulmonary congestion, with a consequently increased liability to haemoptysis: the flooding of part of the bronchial tree with blood containing tubercle bacilli is then liable to bring about extension of the disease.

NOTES AND COMMENTS

Leukoplakia and Kraurosis Vulvae.—Dr. ELIZABETH HUNT (London, W.) writes: In "Any Questions?" (Dec. 4, p. 1005) the writer states that kraurosis vulvae "might be considered as an exaggeration of normal senile atrophy, and for all practical purposes it occurs only after suppression of ovarian activity." How can these assumptions be reconciled with the fact that the women described by Breisky (the author of this term), who were suffering from this condition, were all within the reproductive period of life and all apparently with full ovarian activity? I have myself seen many cases of stenosis of the ostium vaginae (i.e., kraurosis vulvae) in younger women whose ovarian functions seemed to be normal. Some of these cases had been diagnosed as "senile atrophy." It would be of interest to know what exactly is meant by "normal senile atrophy." Does this occur at one site only on the skin—namely, the vulva? With reference to leukoplakia vulvae it is my experience that this term is used very loosely for a variety of widely differing skin affections which may present a whitish appearance. These conditions are often prolonged in duration despite medication; none is precancerous. Cancer, when it does occur in association, is found on the internal surfaces of the vulva only. Can excision of skin around the vulva be therefore justified, as the writer suggests?

Corrections

In the review of *Textbook of the Rheumatic Diseases*, edited by W. S. C. Copeman (Dec. 25, 1948, p. 1108), there is an inaccuracy in the second paragraph. This arose through a misreading of the chapter on clinical pathology contributed by Dr. M. J. Gibson. A correction, which unfortunately arrived too late for inclusion in last week's issue, makes this part of Dr. Kenneth Stone's review read as follows: "Dr. M. J. Gibson contributes a chapter on clinical pathology. His discussion of the blood uric acid is not very clear. He states that plasma uric acid is higher than whole-blood uric acid by 1.0 to 2.0 mg., the normal being up to 6 mg. per 100 ml.; a plasma estimation is more reliable, he says, because of variations in the red cell volume. But there is no accurate method of measuring the uric acid in a protein-free filtrate of the plasma, and 4 mg. per 100 ml. has long been accepted as the upper limit of the normal range. Comparatively recent work suggests 6 mg. as a more accurate dividing line between the non-gouty and the gouty; but further confirmation of this is desirable."

Dr. G. MACD. CAMPBELL (Tylorstown, Glam) has pointed out a mistake in our report (Dec. 11, 1948, p. 1031) of the speech by Mr. John Edwards at the opening of the Public Health and Municipal Engineering Congress. According to the official report of the speech issued by the Ministry of Health Mr. Edwards said that under the National Health Service prescriptions were being dispensed at the rate of 140,000 a year. The figure should have been 140,000,000 prescriptions a year.

Dr. DOROTHY M. JAMES, Medical Officer of Health (Standish-with-Langtree Urban District Council) writes: In the "Epidemiological Notes" (Dec. 18, 1948, p. 1087) I notice that in the discussion of the table for the week ending Nov. 27, 1948, you refer to a local outbreak—7 cases of diphtheria—in the urban district of Standish-with-Langtree. This is incorrect. There were no cases of diphtheria in this district during that period, but 7 cases of measles were returned. I have taken the matter up with the Registrar-General.

In a reference to the Todd insecticide fog-applicator ("Any Questions?" Dec. 11, 1948, p. 1048) it was stated that the T.I.F.A., "so far as we are aware, is not manufactured here." We are informed by the Lister-Todd Engineering Corporation, Ltd., of Imperial House, 15/19, Kingsway, London, W.C.2, that the machine is being produced in this country.

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